This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

NYPL RESEARCH LIBRARIES
3 3433 05772241 9

Crav

VE

FURNITURE DESIGN

FOR SCHOOLS AND SHOPS

✓
×

By FRED D. CRAWSHAW, B.S., M.E.
Professor of Manual Arts, University of Wisconsin.
Author of "Problems in Furniture Making," "Problems in Wood-Turning," and "Manual Arts for Vocational Ends."

THE MANUAL ARTS PRESS
Peoria, Illinois

THE NEW YORK
LIBRARY
392
ENOX AND
UNDATIONS.
914 L

ght, 1914
CRAWSHAW.

FOREWORD.

This book is presented to the public as a companion volume to Problems in Furniture Making, which, while it serves its purpose as a handbook on furniture making, does not emphasize, sufficiently, the great possibilities in simple furniture design. Since the date of the first issue of Problems in Furniture Making the author has been convinced that many who have used it have carried out the designs furnished by the plates without modification. It was never intended that this should be done except, possibly, by those who had no power of initiative for whatsoever reason.

To construct a piece of furniture from a borrowed design is solving only one-half of the problem involved in furniture design and construction. Besides it eliminates the possibility of using one's own ideas except in some element of construction. Initiation on the part of the individual is one of the great purposes of education. If, then, furniture making is to be educative in this way it must develop the power to create and to select and reject. By dividing the plates in this book into groups representing particular types in furniture; by giving only general information concerning these groups, and by offering for each pattern (represented by the perspective drawing on each plate) suggestions as to modification by means of rearrangement of parts and modeling of parts (represented by the working sketches on each plate) it is thought that one may be stimulated to make a design similar perhaps, but rarely ever the same as those herein offered.

The present publication has been withheld until the author might see in at least two states, where he has officially inspected high school manual arts work, what school use was being made of Problems in Furniture Making and what possible place a book like the present one might have. He is, therefore, indebted to the members and teachers of high school manual

arts classes in Illinois and Wisconsin for many of the suggestions which have helped to make this book possible. He is also indebted
grateful for all the assistance rendered by
mercial furniture firms who have permitted
inspection of their work and have given
stinted aid in many ways. He particu
wishes to acknowledge the assistance of M
E. Roberts, Supervisor of Manual Trai

Cleveland, Ohio, who carefully inspected all drawings; Mr. James Dorrans, of the University
sin, for having some of the projects
wn constructed in his classes; Mr. V.
ice, Pittsburg, Pennsylvania, for ink-
drawings; and Professor W. H. Var-
ie University of Wisconsin, for some
igns used in the chapter on "Princi-
s and Expedients."

F. D. Crawshaw.

CONTENTS

PAGE
Foreword 3
Principles, Rules and Expedients......... 7
Practical Helps......................... 11
An Important Principle................. 13
Some Details Worth Considering.......... 16
Group I. Taborets and Low Pedestals. 21
Group II. Stools and Small Seats..... 41
Group III. Umbrella Racks........... 57
Group IV. Book Shelves.............. 63

PAGE
Group V. Wall Cabinets............. 67
Group VI. Screens 71
Group VII. Long Seats and Chests..... 77
Group VIII. Small Tables.............. 85
Group IX. Writing and Sewing Tables. 93
Group X. Large Tables.............. 101
Group XI. Costumers 105
Group XII. Chairs 111
The Average Sizes of Furniture........... 121

PRINCIPLES, RULES AND EXPEDIENTS.

Design may be divided into two parts, pure and applied. Pure design deals with principles and terms used in producing pleasing forms without any particular reference to their application in useful objects. Applied design makes use of the same principles and terms, but always as elements in a problem, the solution of which is the production of a pattern for use. There may be a problem set in pure design, such as the arrangement of certain abstract or conventional spots to illustrate, for example, the principle of balance, Fig. 1. If now these same spots are to be arranged as a part of a symmetrical group for the decoration of a book end, for example, the element of application enters—a use is to be made of the spots as arranged, Fig. 2. The result secured in the first instance *might be used* to decorate some object. The arrangement in the second case, however, is made for the *express purpose* of decorating some *particular* object. In the first case we have an example of pure design. In the second one of applied design.

Now, if an applied design requires mechanical construction as distinct from that which does not involve principles of mechanical operation in carrying it out, it is spoken of as a constructive design, Fig. 3. Manifestly furniture design is a part of constructive design.

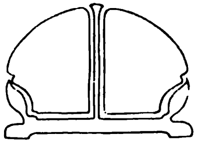


Fig. 1

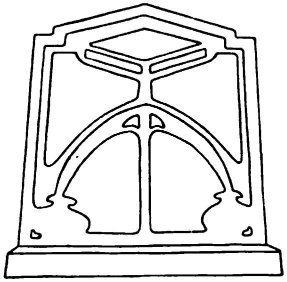


Fig. 2

The parent constructive design is architecture. It may not be easy to draw analogies between the design of a house and the design of a piece of furniture. Nevertheless in the use of principles of design in these two forms of constructive design there is a very close relationship. In the finishing of the inside of a house, in the arrangement of the doors and windows, both from the standpoint of inside and outside appearance, in the dividing up of spaces between doors, windows, etc., problems very similar to

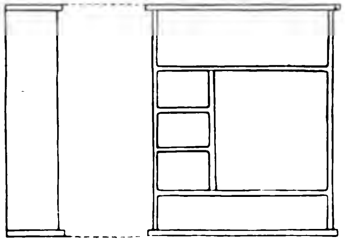


Fig. 3

those found in furniture design have to be solved and the principles involved are the same in both cases.

These principles, as generally classified, are three in number, viz., Rhythm, Balance, and Harmony.

Rhythm is that quality in a design which enables the eye, without effort, to move from one nother in tracing any arrangement of ch the designer has sought to make It has been spoken of as a *movement* parts. Perhaps, because of the use of ls some have thought that rhythm could roduced without the employment of es. The most natural rhythm appears ved lines are employed, provided they are used so that one leads naturally into another as in the case of a scroll. See B, Plate 17 (modeled rail line and outline of pin). However, rhythm is possible without the use of any curves. There is rhythm in a flight of stair steps in the uniform off-set from one step to the next succeeding one and so on. There is rhythm, also, in any well designed piece of furniture whether the parts are severely straight or not, provided there is a *succession* of similar breaks, cuts, projections, measurements, etc. See Plate 32 (Drawers in each cabinet). When the rails in the back of a chair, n a desk or sideboard divide ending or descending

Balance is the equalization of parts to produce apparent or real rest. This condition is the result of pairing-off of parts with reference to an axis, as in the case of a seat, table or desk where one end is the duplicate of the other. See Plates 25, 26, 31, 33 and 34. An analogy is found in the lever where the weight and lever arm on one side of the fulcrum are identical with corresponding parts on the other side, Fig. 4. This is the simplest form of balance and is known as *symmetry*. Another form of balance less easily analyzed but nevertheless just as real and often quite as apparent is produced by the arrangement of parts with reference to the whole rather than its axis. There is quite as much feeling of stability where balance of this more subtle type exists as where it is produced by means of symmetry. See Plate 24 (Perspective and drawing A). In a desk or dresser there may be, in the arrangement of drawers and cabinets, no conformity to the law of symmetry, yet the whole presents a balanced appearance, Fig. 5. The analogy of the lever may be used here, but not so perfectly. It is to be found in a lever which establishes a perfect balance or equilibrium, but

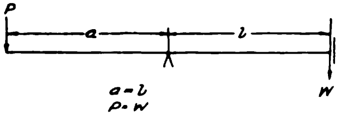


Fig. 4

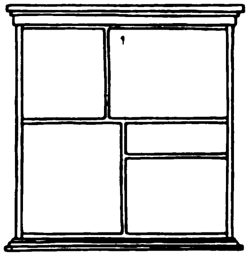


Fig. 5

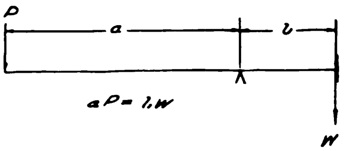


Fig. 6

in which the arms are unequal, Fig. 6. The weight and lever arms on either side of a fulcrum may be quite different, but the products of the weight and pressure into their res lever arms are equal.

The third principle, Harmony, is a result of the existence of rhythm and b If there is perfect rhythm and balance in of furniture it will be harmonious. It wi together as a *unit*. It will express w spoken of as *unity*. Harmony, therefore, quality in a design which is the result of keeping all parts in family relation. There is nothing about the whole which jars upon one because of incongruous or inconsistent relationships. When one uses the principle of "re-echo" of line and thereby establishes a "family of line" as spoken of in "Problems in Furniture Making," by the author, there will be harmony and unity. See Figs. A to F, Plate 5; all drawings, Plate 8; all drawings, Plate 15, for examples of harmony and unity.

It should not be understood that by re-echo of line and family of line is meant an exact duplication of parts. Within any group which be considered a unit there will be similar elated parts, but there need not be, and erably will not be, any exact duplications. od example is found in modeled lines. The nd bottom rails in a piece of furniture may odeled so that they are in keeping one with other, but the modelings will be similar, he same. See drawings, Plate 22, and hard- , Plate 28.

It is not always or even often possible to give rules which may be followed with the certainty that some of the foregoing principles will be carried out in a design. However, a certain few *expedients*, if not rules, may be stated and will be worth following rather closely. They should at least always be given careful consideration in the progress of a design. The suggestions which follow are given in the order believed to be the most suitable in designing and constructing a piece of furniture.

PRACTICAL HELPS.

1. Find a use for a design before it is made. Usually this will be manifest when there is a need felt for the thing to be designed. The need comes first. The use naturally follows and determines some *important* and *governing* factors. For example, there will be some *definite* requirements of size—length, breadth or thickness as, for example, the height of a table or the depth of a chair. The place to be occupied by the piece of furniture, if not its use, may determine some of these dimensions—probably not all, however. Example: a wall cabinet or a screen. Those not thus determined may be considered *indefinite,* such as the size of drawers, doors, etc., and should become definite only when the best adaptation of the principles heretofore mentioned is made.

2. The material of construction to be used in a design is a second consideration. It may be determined by the use to be made of the object or the place it is to occupy, mentioned in 1. Not always will this be the case, however. A good suggestion is: Employ the material or materials which are best adapted to the use or which will harmonize with or correspond to material in other objects with which the one under consideration will be associated. A jardiniere stand or an umbrella rack, for example, may be more appropriately made of metal than of wood. Again, if wood is the material selected the kind must be chosen with care and with reference to its use or the place where the finished object will be used. A close-grained, hard wood may be needed for strength or because it will appear with its associates to better advantage than an open-grained soft wood.

3. Construction is thought of immediately following the selection of material. This is always an important factor in a design. It may be so for one of two reasons: 1st, because it

distinguishes good from bad workmanship as an element in any design; 2nd, it may produce for the article designed a decorative feature.
Joints, the type of which is easily deter
from the exterior view, such, for examp
the screwed or pinned butt joint, the teno
mortise joint which is pinned or keyed an
panel joint come in this class. See Figs.
F, Plate 5, and all drawings, Plates 14 an

In fact, such decorations, aside from woo
ishing and the ornamentation of a piece o
niture by metal fittings (See Plates 24, 2
and Plates 31 to 34), constitute some of the chief forms of decorative design permissible in furniture. It will be noticed that reference has
en made to a classification of design not
usly used, viz.: decorative. Sometimes
rds "decorative design" are used to sin-
those features in a design which are re-
as embellishments or additional enrich-
the *general* outline and proportions of
ject being regarded as the dominant or
design. See upholstery, cuttings, metal
and fastenings, Plates 15 to 18.

AN IMPORTANT PRINCIPLE.

Having considered the three first important expedients or rules, if they may be so called, pencil may be put to paper and the design developed line by line. First of all the "blocking-in" process takes place. By this is meant the determination of the *general shape* of the object by use of straight lines following the method of the architectural draftsman when he makes a "sketch", Fig. 7. In this step one essential consideration is made which the furniture designer borrows from the designer of buildings. It may be called the *three-part principle* in design which is so carefully developed in Robinson's "Architectural Composition."

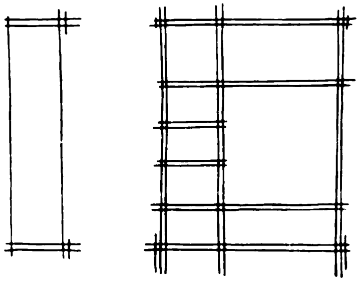


Fig. 7

In brief the principle is this: In every good design there is from one to three, and not more, *emphasized divisions*. See Plate 27 for example of one-part design, Plate 29 for example of two-part design, Plate 22 for example of three-part design. When more than three such divisions are made in a single whole, unity is lost because *uniformity* of shapes and sizes is present in the arrangement of the parts, or because there is no system used in such an arrangement. In an object of one part there is unquestionable unity. In a piece having two parts only, if one is subordinate to the other, as it must be unless it is the equivalent of the first, (in which case the result is one part instead of two), there is also unity. See perspective, Plate 30. Likewise in a three-part object unity exists because the three parts if equivalents will be regarded as one part only, or if they are not equivalents one at least must dominate either because of its

size; the other two therefore will be

nated to the dominant division or "r

as the author has spoken of it in "Pr

Wood-turning." See Plate 32. Here

inet portion of sideboards "dominates"

part design.

In case the arrangement of a three-pa

is such that two parts are equivalent

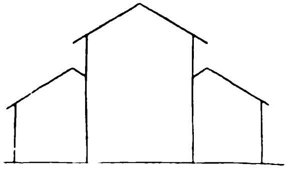


Fig. 8

phasized in excess of the remaining one, either because of their shape or size, then the order of subordination is reversed but unity still obtains. An example of the first order, in architecture, is given in a building which has a central main part with two smaller adjacent and extreme wings, Fig. 8. The second order is exemplified

uilding which has two large wings con-

with a smaller single part, Fig. 9.

pecial case of a three-part combination

borders closely upon the sequence which

unity as distinguished from one which

the one in which each succeeding part is

nt in shape or size, or both. Here, how-

he exception does not break the rule. In

lgment of the best designers unity exists

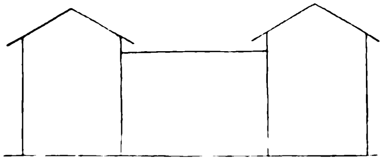


Fig. 9

in such a combination. It is well that this is true, perhaps, for in furniture design this special case is the one into which most designs fall, as, for example, the average chair, the dresser, buffet, sideboard, chiffonnier, and some tables. All of these may and often do have three distinct and related parts: the body and the parts below and above the body, no one of which is a duplicate or even similar to another. See perspectives, Plates 39 and 40.

Now, when the sequence referred to above has more than three members, either the same, similar or different, a lack of continuity is at once evident. Unity is lost and the design therefore is no longer desirable.

The three-part principle may well be closely observed by the furniture designer, not so much, however, in the *development* of the design as in the *conclusion* of the same. *If upon inspection a design cannot readily be analyzed to present three well-defined main parts its value may be questioned.* It may, of course, be an exception. On the whole the rule is a safe one to follow.

SOME DETAILS WORTH CONSIDERING.

There are many items of interest and value which may be listed under the head of the *mechanics of the designer* and which are as
able as the principles themselves. In
used they will be a material help in ex
these principles.

Fig.10

1. One of the litt
which will assist in
ing a rhythmic whc
kind of curve to us.
terning a member or modeling a rail, stile or leg. If we look at a spear of grass or grain at a time when there is plenty of moisture in the ground, and there is not excessive heat, it will be noticed that the stock rises at a considerable angle with the ground and with a very slight bracing curve, which is the embodiment of *grace,* and ends in a sharp, short, downward curve expressing *vivacity,* Fig. 10.

These two qualities, grace and vivacity, are much to be desired in all curves used in a de-
We cannot always go to Nature for an
pattern to be used or even to be adapted,
is usually safe to express in our design
minant natural forms. Use curves which
nly a *moderate* or *slight* curvature, and
have a *graceful bracing body* with a
turn on the end. See cuttings, Figs. C
, Plate 7; B and C, Plate 8, and cuttings
and leg outlines in drawing, Plate 15.

2. In furniture design, especially of the craft type, curves are used principally in modeling lines. Consequently the sharp turn at the end of the long sweeping curve will very likely be adjacent to a straight line, because the modeled line will be a variation of a part of some straight line. The intersection of these two—the short curve and the adjacent straight line, which very often is the edge of a stile or rail—is known as a *positive point.* Even as detrimental to

good design as the graceless and lifeless curve is the one which "rambles", which is meaningless because it seems to have no purpose in the direction it takes. Positive points assist materially in giving *character* to a curve. They furnish stopping or beginning places for curves and straight lines in a series which form an outline. See a and b, Fig. A, Plate 17; a, b, c, d, e, f, Figs. A and B, Plate 22.

3. In planning the approach and departure of curves to and from positive points, it is always well to have the curve tangents at the point of their intersection, or the positive point, at right angles. The length of the curve to which the tangent may be drawn need not be great. As a matter of fact, it should be a short curve if the off-set between succeeding members in a succession of lines, whether they are all curves or not, is to be slight. See examples given in Fig. 2.

4. This off-set is important for two reasons. First, if slight as it should be, it helps to establish that *finnesse* in design which is partly described by saying that a design should be suggestive only in its appeal. It should not be loud or vulgar. It must not be blasé or ornate. The slight off-set at positive points leads to a *fine interpretation* of the outline. See examples given in Fig. 2.

5. Second, it partly establishes the direction which the second curve should take. In general, succeeding curves should have similar directions. They should, therefore, be more or less nearly concentric. In explanation of this it may be said that when there is a slight off-set between curves of similar shape and direction there is established by them a flow or movement which makes for rhythm. See examples in Fig. 2.

Every piece of furniture, whether it rests upon the floor or some other horizontal plane, or hangs upon a wall, should be stable in appearance. If we study architectural forms carefully, we find that a structure is given the appearance of stability by treating it in one of two ways. First, by giving greater width to the base than to any other portion, or second, by increasing the height of the base or basic third over any se. See Plate 1[illegible] for examples of second case.

The same principles hold good in furniture nstruction, but may be adapted in different ıys; in all cases, however, in such a way as to ect an apparent weight at the bottom sufficient give the object stability. This usually means at the apparent center of weight in a piece furniture is below the geometric center. In eces of furniture which have a cabinet, this rtion should be nearer the bottom than the p. See Plate 22. In case this is not possible, en the space below the cabinet should be conlerably larger than the cabinet itself, as in a ble for example. See examples, Plates 31 d 34.

In an object which is partially enclosed and t not to such an extent that it becomes a cabet, as in that portion of a chair below the seat, e boxing-in material is so arranged that aprent weight comes near the bottom. See

6. That p
est emphasis
which appea
bulk. It is s
It will be on
design. The
will likely b
If so, it is w
and should
without a re
essarily the
It should be
nearly equals

It may be,
the unit of m
est of the thr
this case the
any one of t
the smallest
divides into

leads to a consideration of the general subject of dividing up a space area. The previous statements regarding center of gravity, the place of apparent weight, and the unit of measure and its relation to the three-part design should not only lead the way to dividing up space areas properly, but should practically determine how any particular one should be divided.

One additional detail should be spoken of, however. It is often desirable to exaggerate length or width. This cannot always be done by alone making use of the foregoing principles. Any particular dimension may be emphasized by allowing bordering lines such as stiles or rails to extend thru. See Plate 23. In case the height is to be made most prominent, allow door stiles, instead of rails, to run thru and thus further elongate, in the direction of the height, any panels or other parts, such as rails, stiles, legs, etc. See Plate 23. In case the horizontal dimension is to be exaggerated, all horizontal lines possible will be run thru. See Plate 27. It may not be advisable from the standpoint of construction to run door rails thru horizontally. However, usually enough parts may be run thru horizontally to give the desired horizontal elongation.

8. It should always be remembered that, as a rule, one sees more than one surface of a piece of furniture when viewing it under ordinary conditions. Also a perspective view is seen by an observer rather than one which is shown by an orthographic projection drawing. Every possible allowance, therefore, should be made for differences between the pictured point-of-view and the actual point-of-view. In objects made to rest below the eye less will actually be seen of those parts nearest the floor than the orthographic drawing will show. For objects made to rest above the eye, the reverse is true. Furniture should be designed to meet this contingency. Compare perspective and working drawings, Plates 16 to 18. In this connection, too, it may be said that because at least two surfaces of a piece of furniture will usually be seen by any observer, there should be a continuity of line around it wherever this is permissible. Base-boards, cap-boards, mouldings, and divid-

ing lines, should be shown *at the same level* on the ends and front or the sides and front of any object. See Plates 30 to 34. Very often paneling may be arranged on ends or sides to correspond with front paneling or with dividing lines in front doors or drawers. This is generally advisable. See Plate 27.

9. The question of the arrangement of parts in a piece of furniture is partly one of constructive design and partly one of decorative design, considering these terms as they have been used in this text. The decorative design feature in a piece of furniture, however, is not alone confined to such arrangement. The modeling of lines heretofore mentioned is an important factor in this division of the general problem. In this work must be included the forming of feet, the cutting of tops of posts, and the use of protruding parts. See Plates 5, 7, 8, 10, 11, 12, 14, 17 and 18. Then, too, there is another decorative element to consider, viz.: the use of metal fittings, such as hinges, pulls, and other escutcheons. These should be hand-wrought and in every way in keeping with the general lines of the object on which they are to be placed. See Plates 22, 24, 28, 29 and Plates 31 to 36. The material, too, should be such as will tend to enrich and enoble the design as a whole.

10. Another very important element in the enrichment of a piece of furniture is the finish which it is given. Upon the subject of wood-finishing much may be said which space here will not permit. It is a subject in itself which will continue to be a large one and always a new one. The reader is referred to "Problems in Furniture Making" by the author for some definite information upon wood-finishing and for valuable references to this subject in other books.

GROUP 1.

TABORETS AND LOW PEDESTALS.

SUGGESTIONS FOR FIFTY-TWO POSSIBLE DESIGNS.

pply these. In fact, it is often difficult to determine that in the selection of a piece of furiture for construction there was given even a hought to any particular development in these iatters. The beginner is often allowed to select rojects which involve simple construction eleients, but which are too large to permit of comortable handling of parts without the machine quipment usually available in the larger schools nd in shops. Emphasis is here given, thereore, to the large range of possibilities in design nd construction in small tenon and mortise raming projects. From this first group selecions may be made for first furniture projects hich will suit the individual abilities of a beinning class in furniture design and construcion.

Plate 1 gives a suggestion for the simplest ossible taboret construction. This pattern

verticall
bottom r
its dista
to the d
and does
should n
varying
top rail
particula
struction

Note th
rails in
also conf
of the ta
tenons in
top boar
or a "fan

The sid
or left o

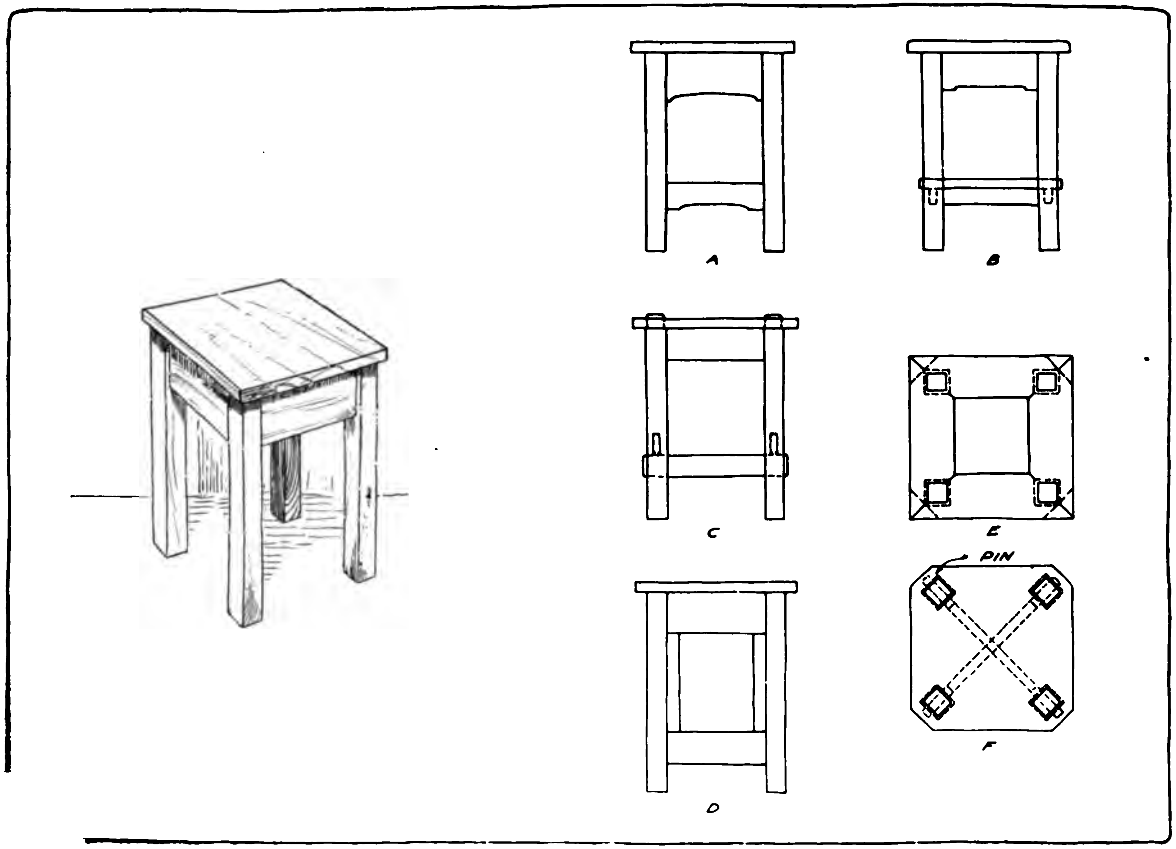
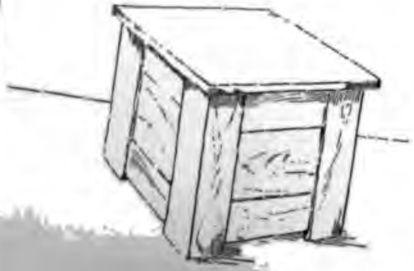


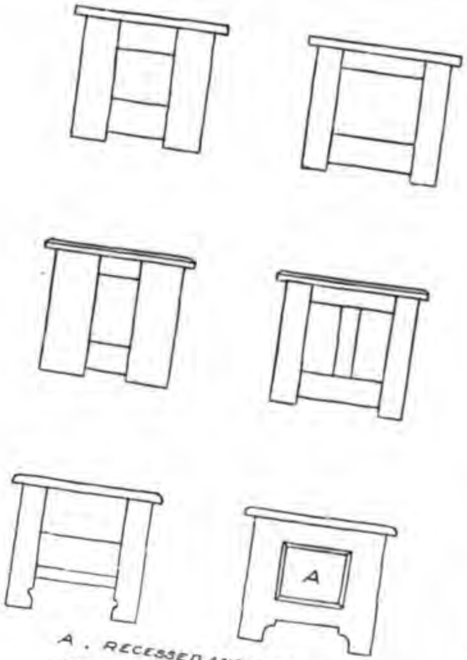
Plate 1

space may be filled with a tile and the leg tops may protrude thru the mitred corner frame. F suggests a half-lap diagonal-rail construction immediately under the top board, with the ends of the half-lap boards tenoned into the legs which protrude thru the top and are keyed.

Plate 2 gives examples of a "box" taboret. It is approximately a cube and may be twelve or fourteen inches on an edge under the top. The height, however, may be slightly greater than the width. Little comment need be made concerning the breaking up of the sides into well-related parts. It is believed the sketches serve to emphasize principles. Note particularly the relative widths of parts.

The corners may be fastened by means of a butt or a mitre joint. Spaces surrounded by rails and legs may be left open or filled with panels, which may be fastened into a groove or an inside rabbet.





A . RECESSED AND DECORATED
OTHER SPACES OPEN OR PANELED

Plate 2

Plate 3 suggests a modification of the general design in Plate 2. Here the tapering leg is introduced except in A and B. The general proportions are similar to those in Plate 2. The dimensions may be greater. Note that in C the leg tapers in one direction only. D has a panel rail, whereas E has an ordinary top rail with a modeling to suggest an inside square. This introduces a prominent vertical line in the leg.

THE NEW YORK
PUBLIC LIBRARY
ASTOR, LENOX AND
TILDEN FOUNDATIONS

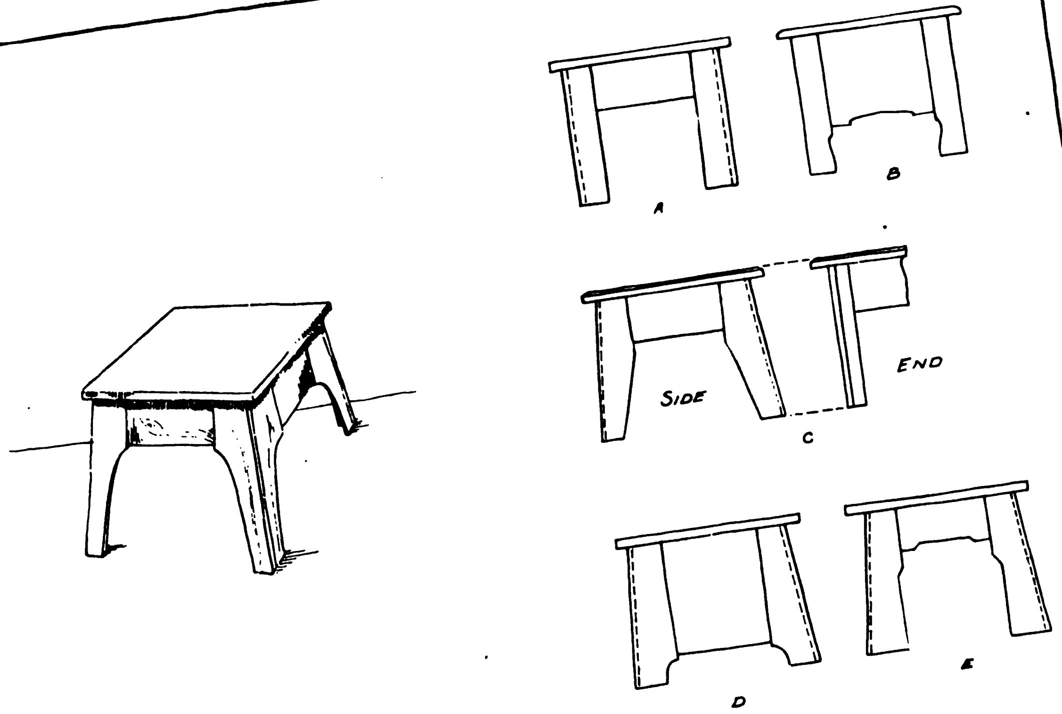


Plate 3

Plate 4 introduces the circular top. The construction may or may not be different from that used in Plate 1. For a large, low plant this taboret should be fully as wide, or wider, than it is high. The height in this case may be from twelve to fourteen inches. If the plant is tall and spreading, the height should be from fifteen to eighteen inches and the width somewhat less than the height. For a tall, slender plant the height may be increased to twenty inches and the width decreased to ten or eleven inches. None of these proportions should be settled until an exact drawing is made. By this means, only, can one estimate relationships.

In A the rail runs around the taboret between the legs. In B the rails are cross-lapped. C has a cross-lap rail at the top and a rail running around the taboret at the bottom. D reverses this order and adds a shelf above the bottom rails or tie rods. The shelf is notched to fit around the inside of the legs.

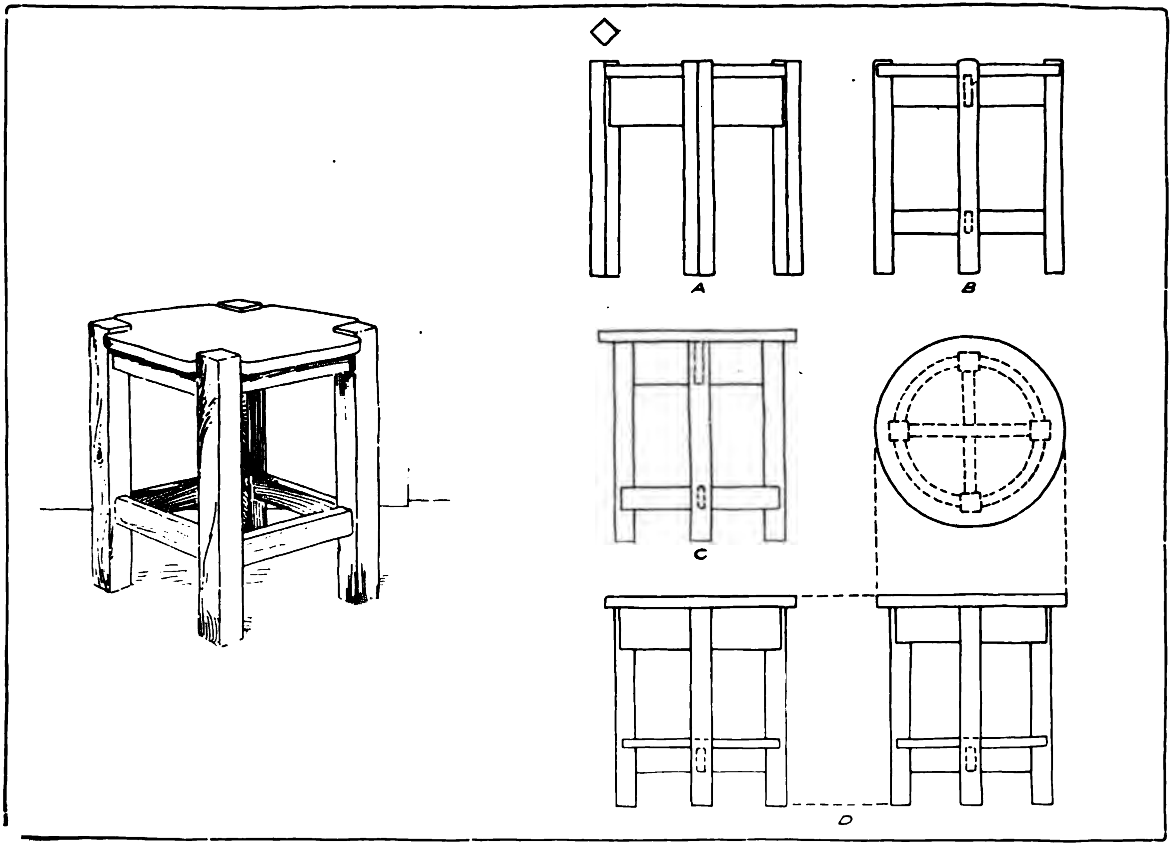


Plate 4

An octagonal construction is illustrated in the drawings on Plate 5. As heretofore s
general proportions are dependent larg
the shape and size of the article to
upon the taboret. Good proportions w
be secured with a heighth of about
inches and a top distance between the si
top, rather than across corners, of appr
sixteen inches. These dimensions wi
"bulky" taboret suitable for a large p
the heighth increases the width should decrease but less rapidly. The width of the legs, also, which may well be five and one-half or six inches for the taboret above specified, should decrease
width as the heighth increases.

In A the rails run around the taboret both at
top and bottom. Presumably their ends
l be cut to butt against the edges of the legs.
e construction in B is similar to that in A at
top, but half-lap cross-boards are used to tie
legs together at the bottom. This half-lap
nstruction is used in one form or another in
, D and E; that used at the top in C involves a double rather than a single cross. In F the rails at the top and the cross tie boards at the bottom butt against the edges of legs.

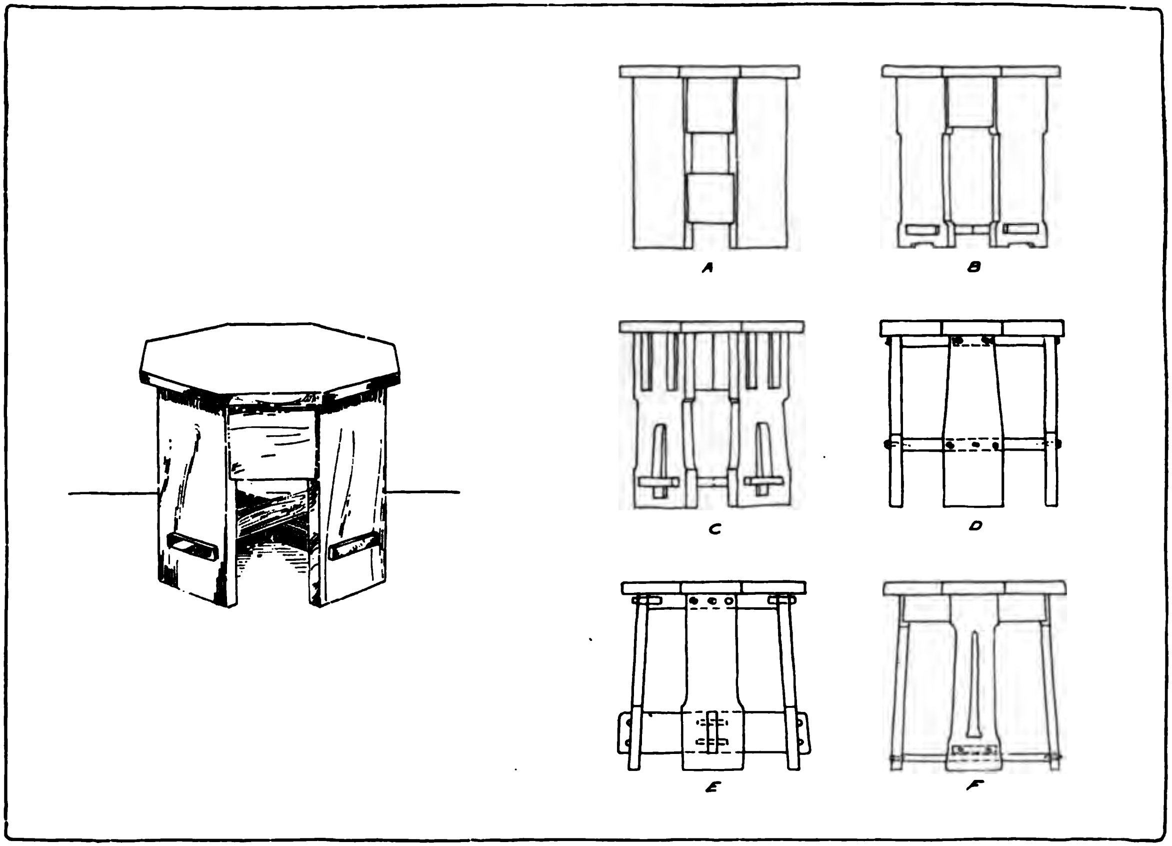


Plate 5

portions are
and size of the article to be placed
iboret. Good proportions would here
with a heighth of about eighteen
a top distance between the sides of the
than across corners, of approximately
hes. These dimensions will give a
aboret suitable for a large plant. As
h increases the width should decrease
apidly. The width of the legs, also,
well be five and one-half or six inches

the top and bottom. Tres
will be cut to butt against tl
The construction in B is sim
the top, but half-lap cross-bo
the legs together at the bot
construction is used in one
C, D and E; that used at tl
a double rather than a sing
rails at the top and the cro
bottom butt against the edg

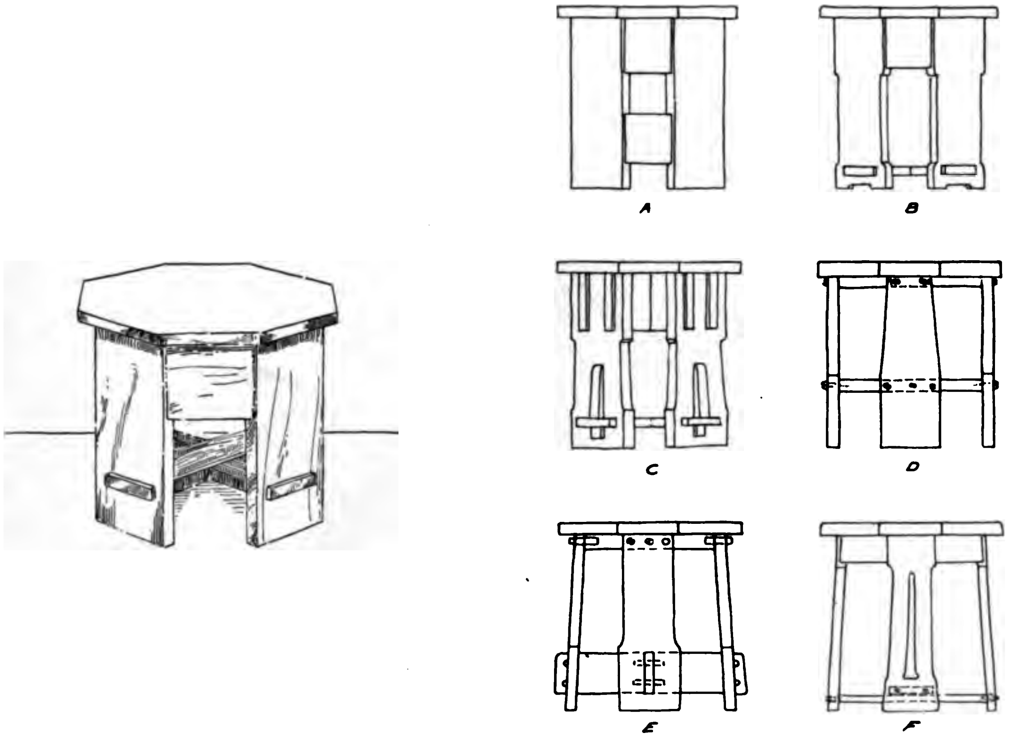


Plate 5

Plate 6 illustrates a rather heavy-framed construction and consequently suggests l
mensions, not less than eighteen or
inches in heighth and perhaps fifteen i
leg width. Attention is called simpl
means employed to secure an effect of

the bottom and to secure pleasing proportions.
the perspective sketch the openings might be
same in size, but the bottom rail in this case
uld be considerably wider than either of the
er two.

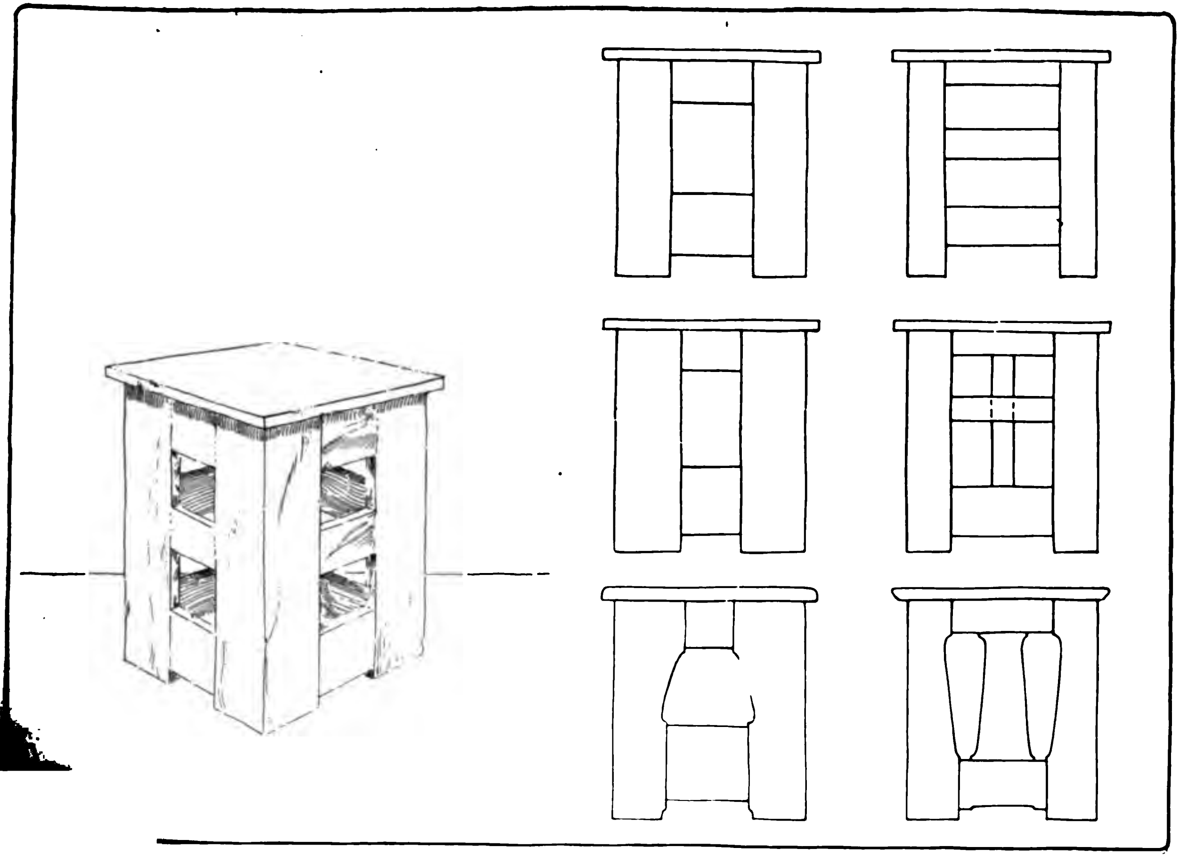


Plate 6

for tall or pedestal taborets. These may for plants and also for statuary. They serve also as smokers' tables for living and club rooms. The average heighth should be from twenty-two to twenty-five or twenty-six inches. The spread of legs at the bottom should be approx-

the
or
any
in
cept

THE N
PUBLIC L
ASTOR, LEN
TILDEN FOUNDAT

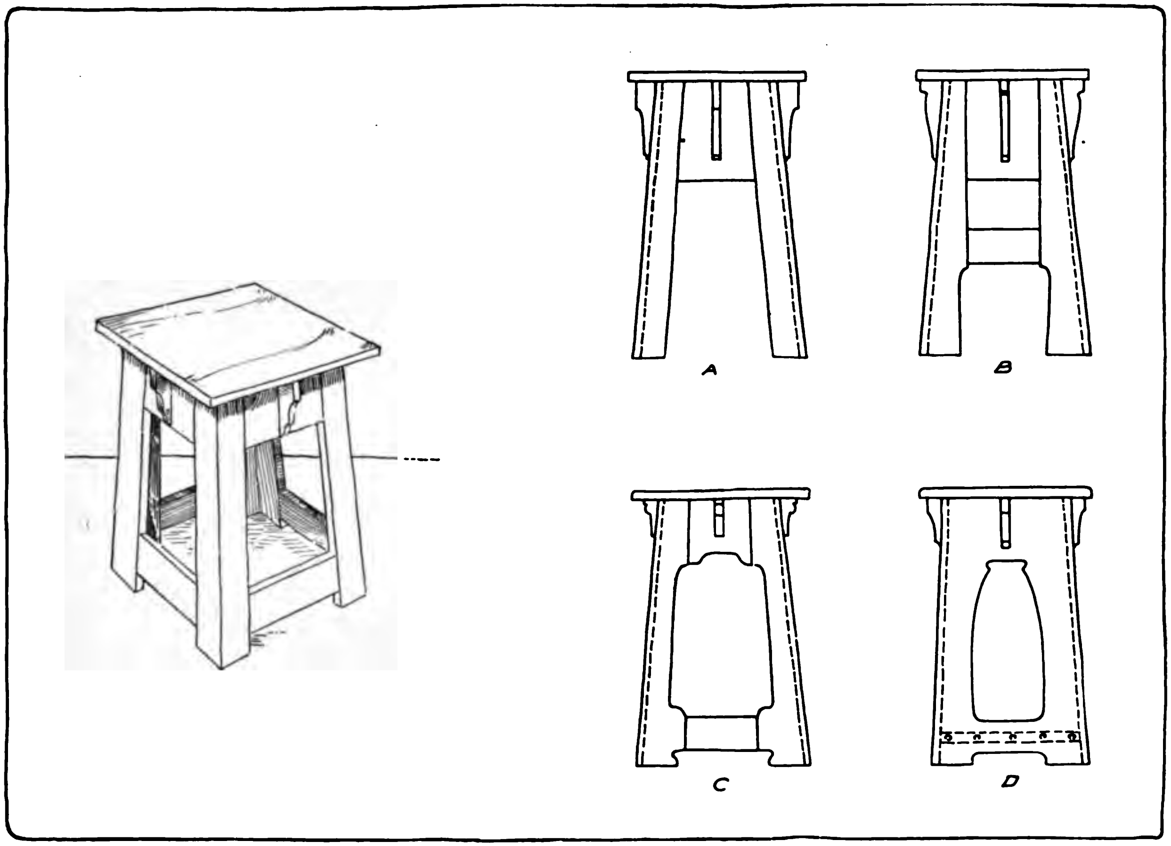


Plate 7

the inside surface of the adjacent sides. An attempt has been made to keep a harmony of line in each design and to use curves of grace and strength which together secure beauty. The off-sets where a break occurs in an outline should

lines
as f
curv
angl

TH
PUBLI
ASTOR
TILDEN

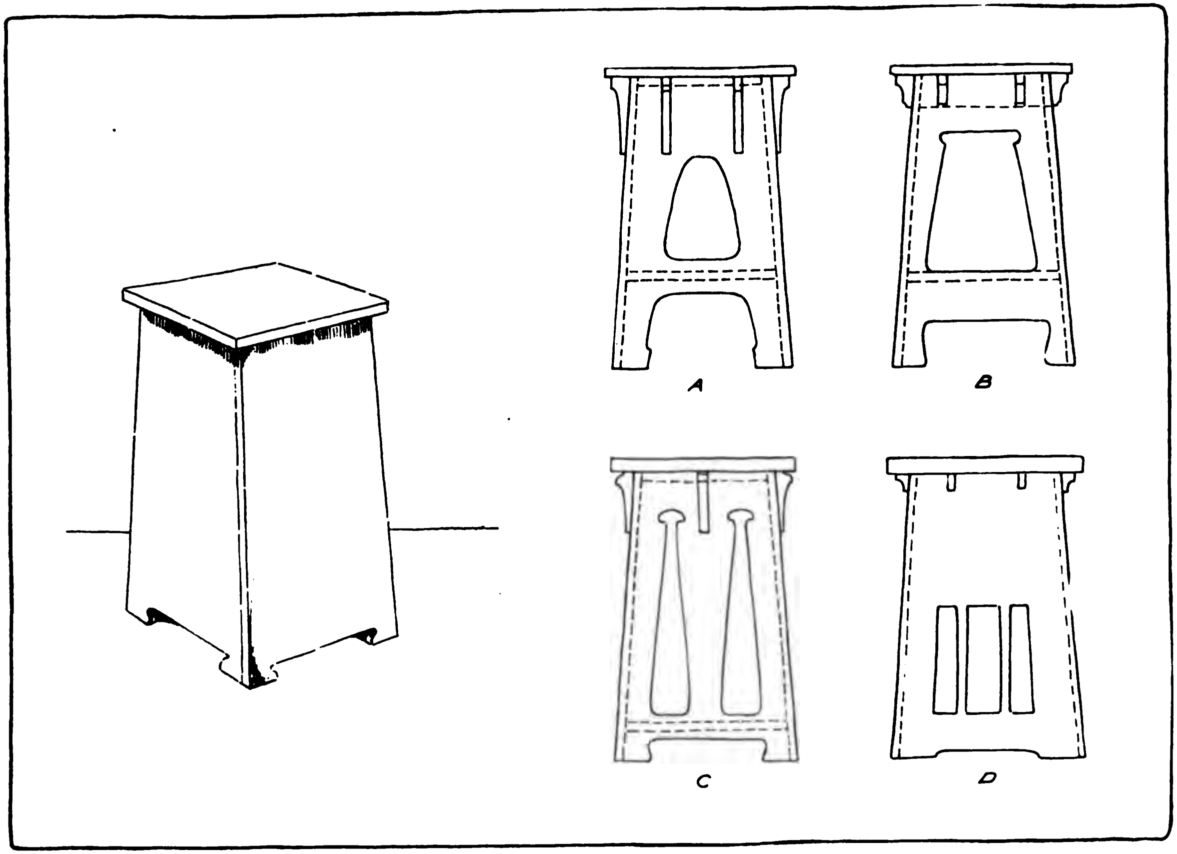


Plate 8

The tables in Plate 9 are extreme taboret patterns. They are appropriate for special purposes in the home, especially in the living and sewing-room and in bedrooms.

We approach cabinet construction in these designs. In it we should make such use as seems practicable of the theory put forward in "Architectural Composition" by Professor John Beverly Robinson, in The Architectural Record, where he suggests the three-part combination in good architectural designs. This theory is summarized in the chapter on Form and Proportion in the author's book, "Problems in Wood Turning." In the introduction to this volume its application to furniture design is discussed.

It will be noted that there is a measure sequence and a dominant measure in the designs in Plate 9. The vertical space is not divided up geometrically, but a gradation in space widths is nevertheless apparent. This gradation, however, is not in all cases sequential, nor need it be.

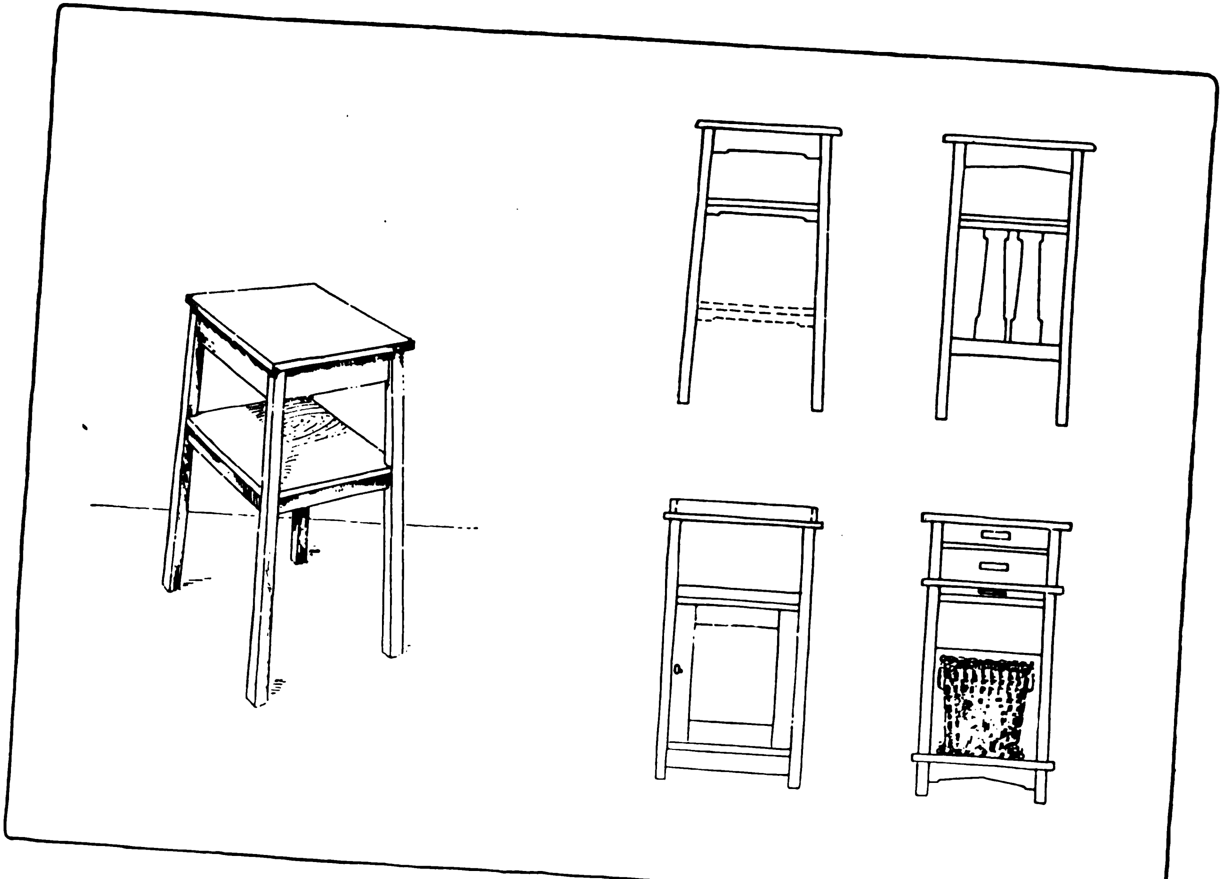


Plate 9

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS.

GROUP II.

STOOLS AND SMALL SEATS.

SUGGESTIONS FOR FORTY-FIVE POSSIBLE DESIGNS.

No other piece of furniture is more popular with the average student in a class in fu making, perhaps, than the stool. It very serves as a last project in a one year's working course. Certainly it often finds a at the beginning of a year's work in fur and cabinet-making. The possibility of in design is very great and in the forty- more designs which are shown in this group an effort has been made to present a rather unusual number of unique and pleasing outlines.

Uniqueness is not a test of good design. When, however, one produces a pleasing effect and at the same time develops something which is unusual, but not erratic or extreme, he may lay claim to having produced a design which will command attention if not respect. It will usually command both attention and respect.

Plate 10 gives suggestions for simple box-top ls. The following average dimensions, if , will secure a piece of furniture of good ortion and one which will be serviceable: ght, fourteen to sixteen inches, length, eigh- en to twenty-two inches, and width, about fif- en inches. In case this stool is to be used as a receptacle for a shoe-shining outfit, it should have a foot-rest on the under side of the movable part of the cover. The height of the top from the floor when the cover is hinged in position to use as a foot-rest should not be more than fourteen inches.

One design shows a tray at the bottom. It is used in connection with the box at the top for shoes and rubbers, the tray serving as a place to receive wet and soiled foot-wear.

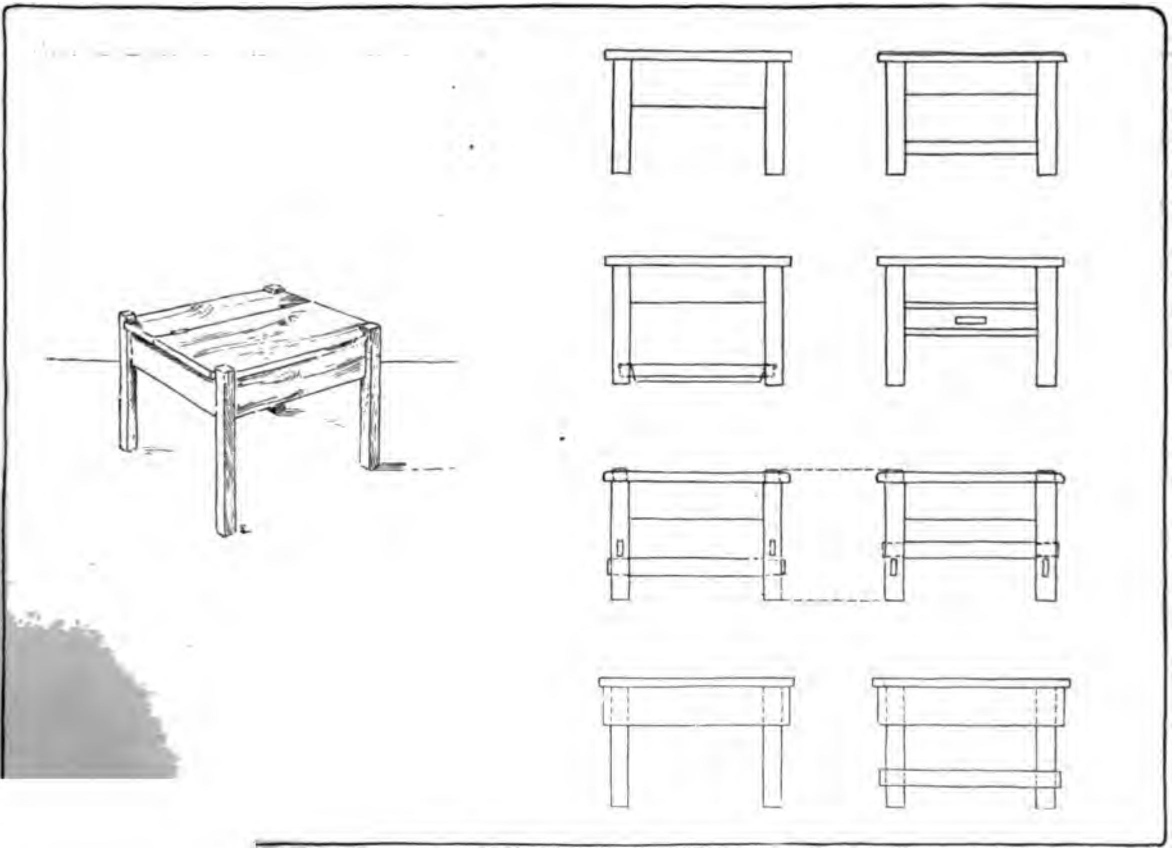


Plate 10

Plate 11 shows modifications and modeling of parts in a square-topped stool, approximately eighteen inches high and from twelve to fourteen inches square. There would be no objection to making the top oblong instead of square. In this case the height would decrease slightly and the length and width would average fifteen and twenty inches respectively.

In the perspective the top is shown as woven. Either leather cord or cane may be used over a square frame which sets down on cleats fastened to the inside of the rails. A solid piece of leather might also be used, stretched over the edges of the frame and fastened underneath.

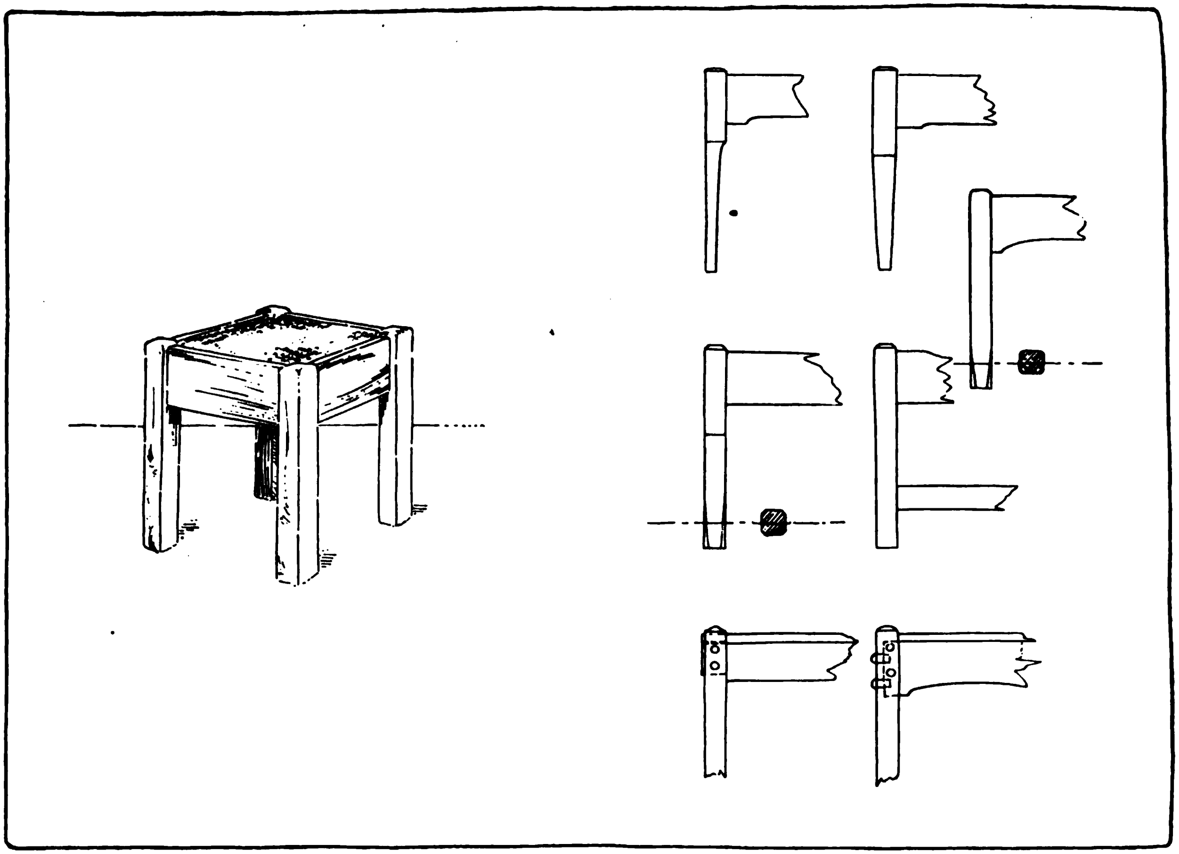


Plate 11

te 12 is not very dif-
in Plate 11 just de-
of leather or canvas
top rails and fastened
seat material may be
cing a board on cleats
ıg material between it

and the seat. The middle modificatio
shows the seat material drawn aro
drical or rod rails. In this case th
should be securely laced together on
side. Between the two layers of th
terial may be placed some padding.

THE NEW YORK
PUBLIC LIBRARY
ASTOR LENOX AND

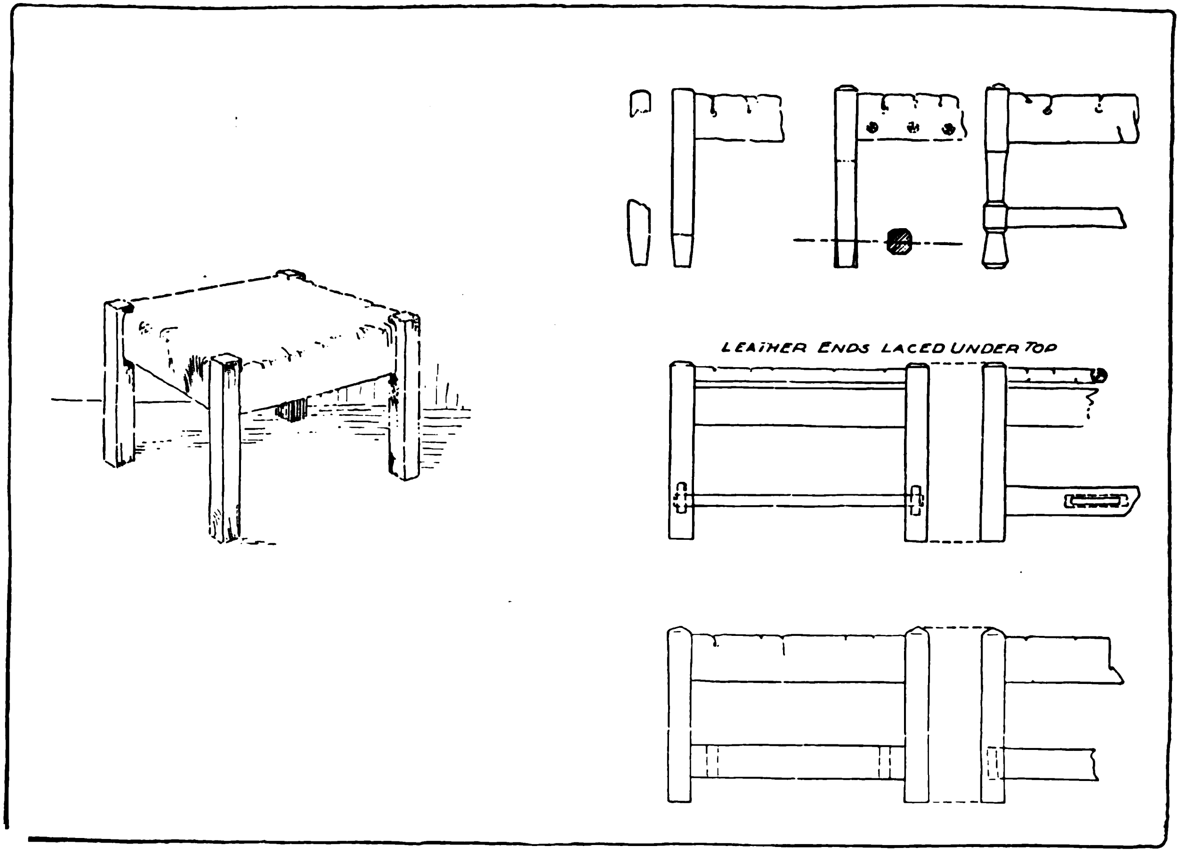


Plate 12

for a low stool. The
drawings, however,
stool of normal di-

these designs would
es in height and the
by twelve or four-
l used for weaving

may be drawn around the two
forming the top rail support, or
the bottom one of the two rods on
and return back over the top inst
ing underneath. The reverse ord
used in the bottom modification de
a basket.

THE W YORK
PU LIBRARY

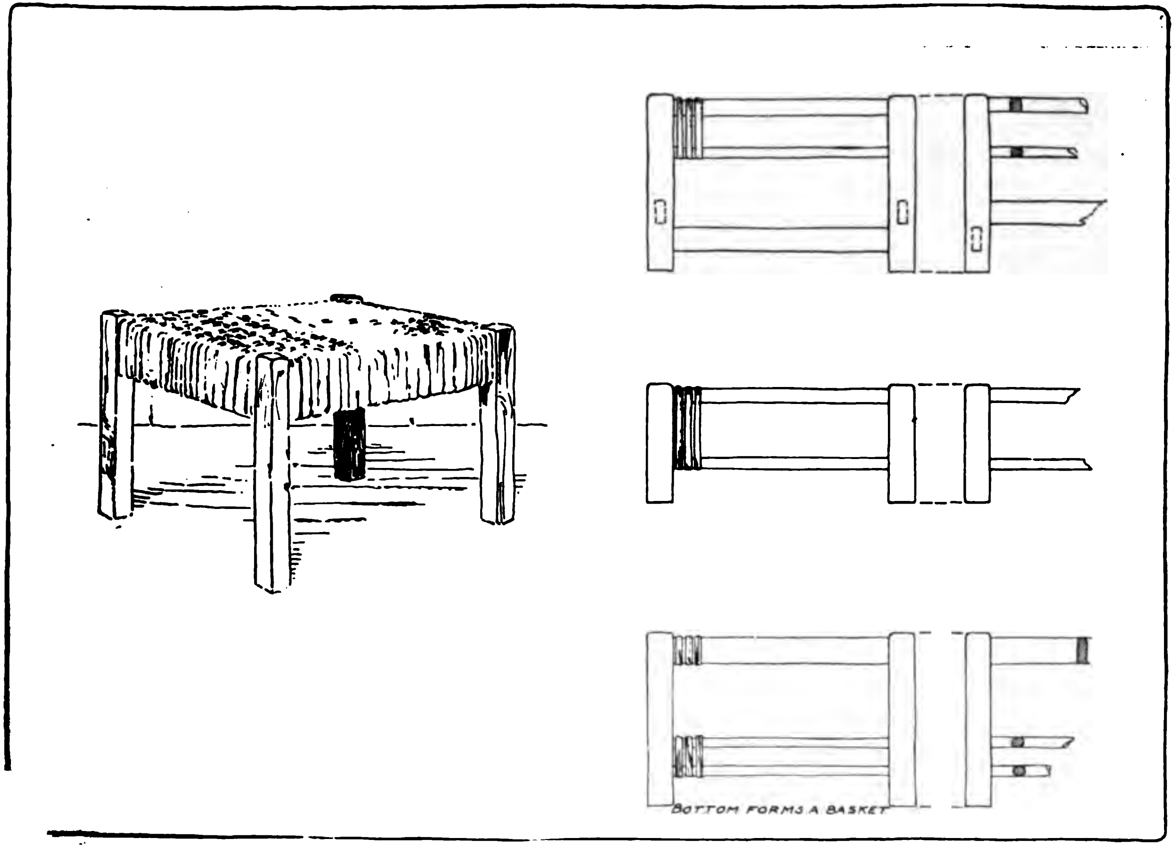


Plate 13

14 to 18 inclusive, are somewhat out of the ordinary both in design and construction, suggesting varying degrees of complexity and difficulty. None of them should be over sixteen inches in height or eighteen inches in length. The width appropriate for these maximum height and length dimensions should be about ten or eleven inches. These stools offer many interesting upholstering problems for the solu-

THE NE
PUBLIC L
ASTOR
TILDEN

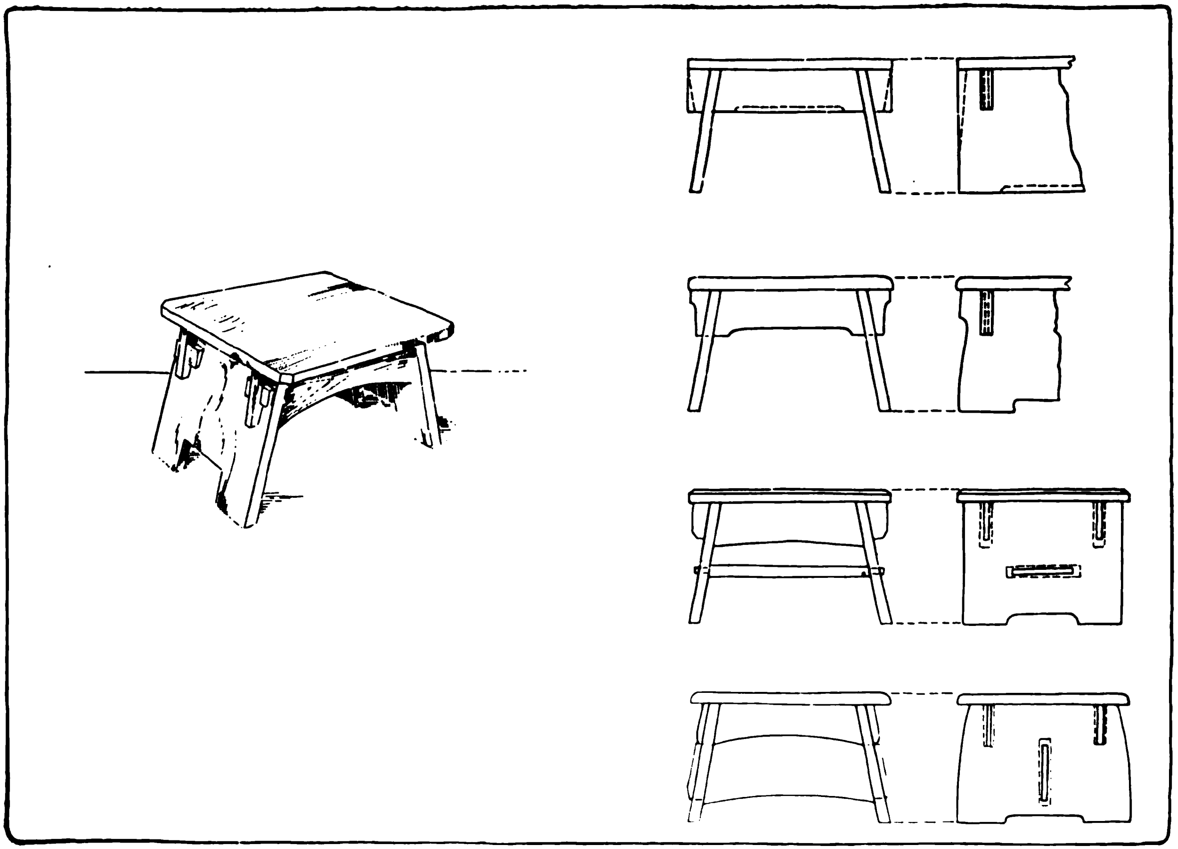


Plate 14

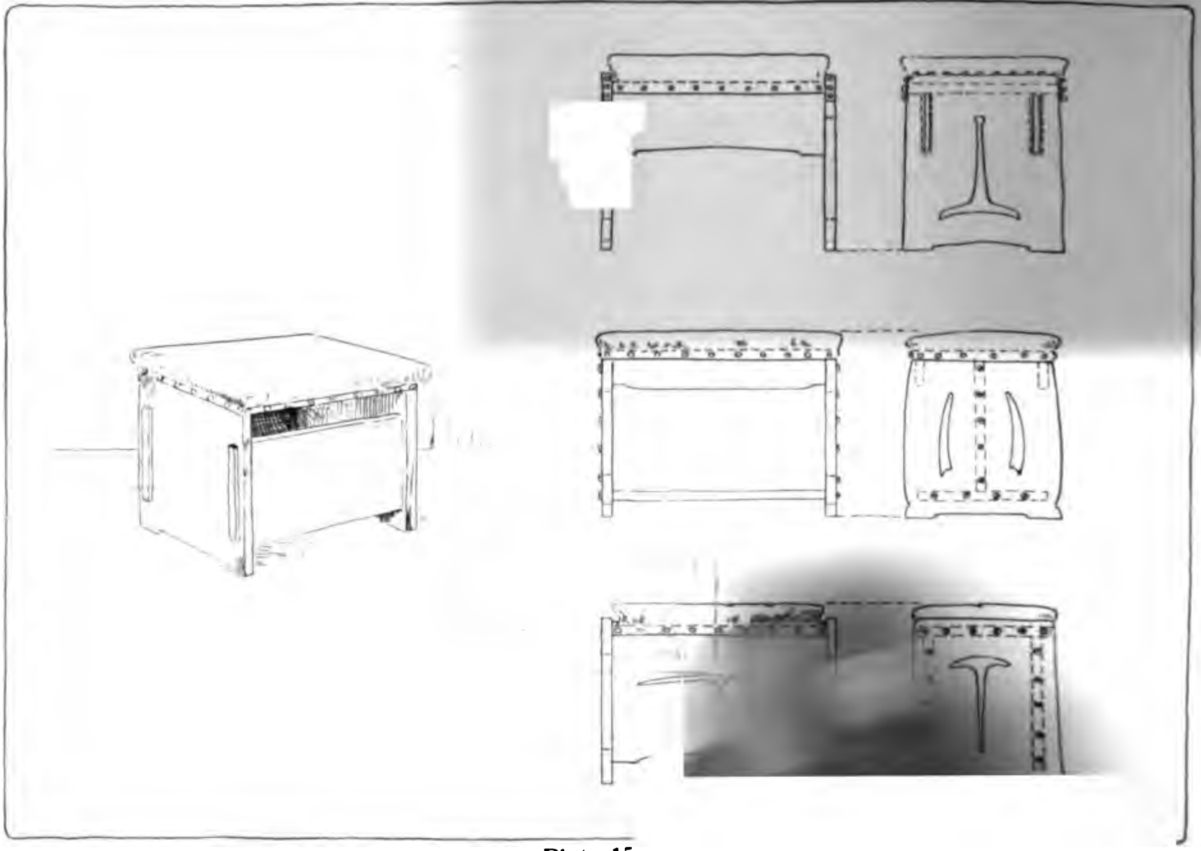


Plate 15

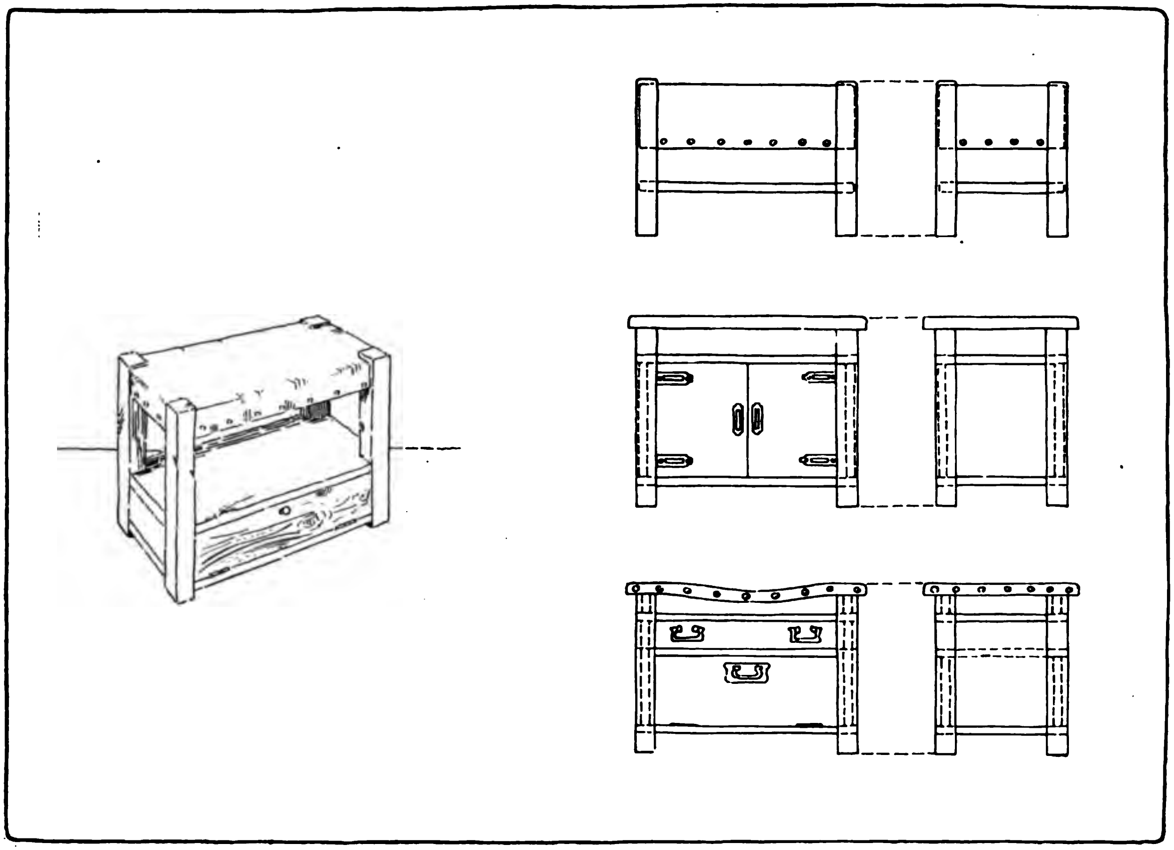
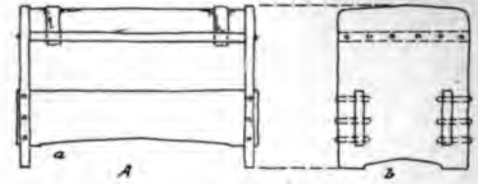
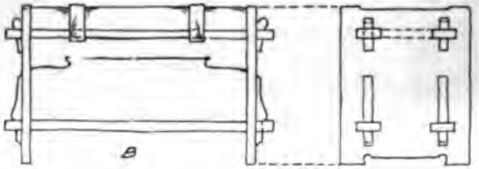


Plate 16



A



B

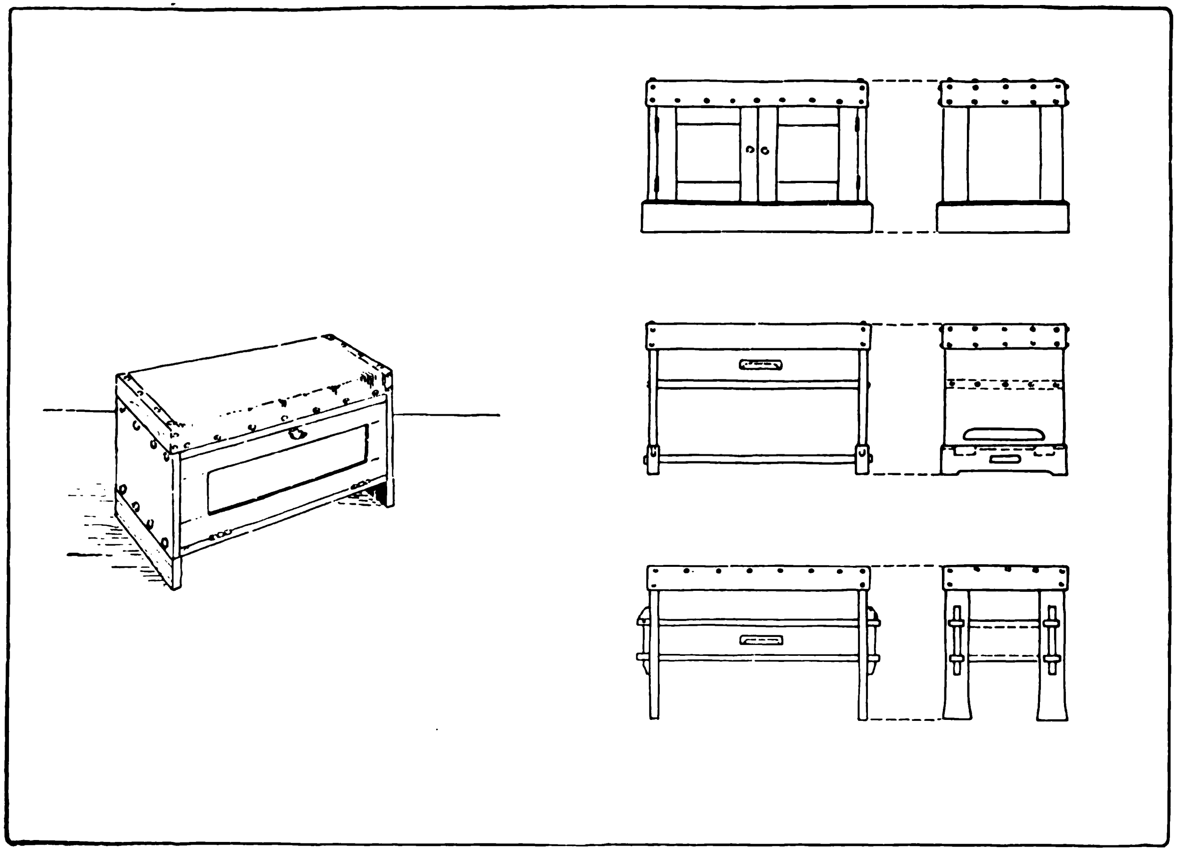


Plate 18

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS

GROUP III.

UMBRELLA RACKS.

racks are

Plate 19 is
offer much
n except in
hould be sim-
ith a bottom
e water which
he pan should

In shape the box umbrella rack should vary from the vertical to the taper which gives a square at the top slightly less than the size of the bottom board. The height should be such as to allow the handle and a small portion of the umbrella ribs to extend above the top edge.

A variation from the box type is shown in the last of the modification drawings where the sides are made in the form of a frame.

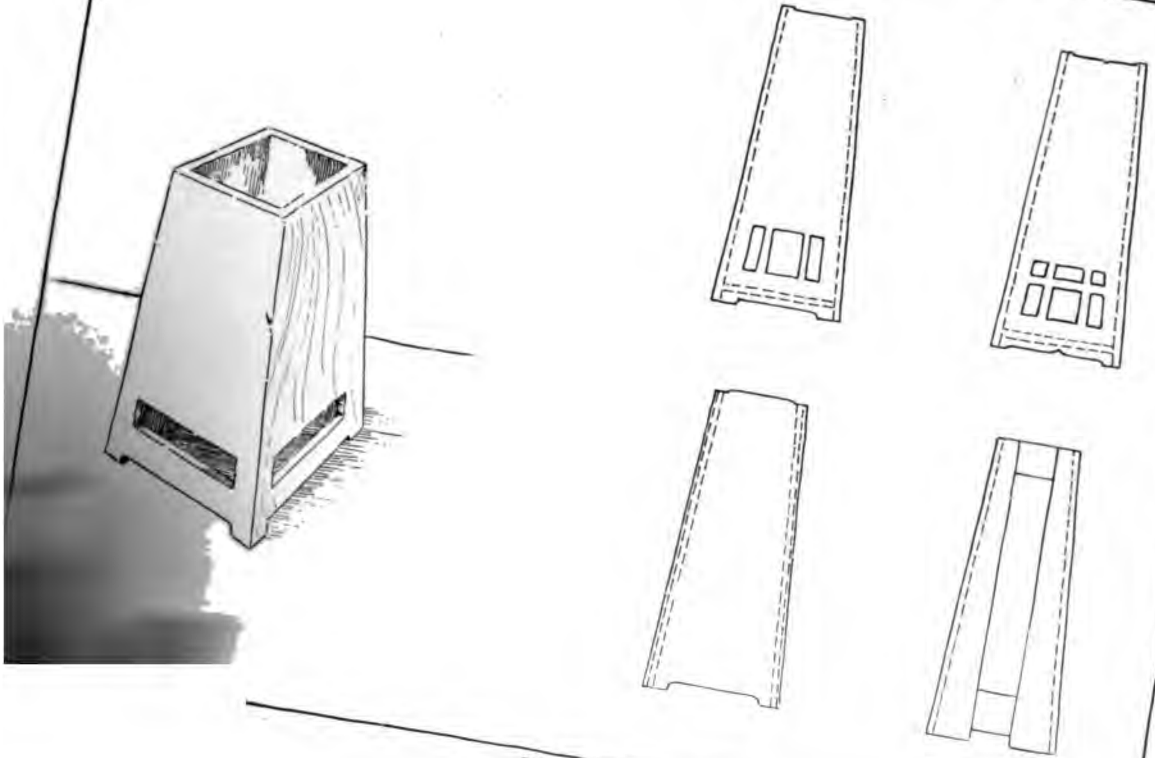


Plate 19

There is a greater opportunity for mo tions and a change in arrangement of parts the skeleton type of rack shown in Plate 20 than in the box rack. This may be made either square or oblong to be used in a single room for general house use. The design may changed to produce a long narrow rack will answer the purpose of an umbrella receptacle for public buildings.

Particular attention should be paid to the

i g up of the large open space on the sides. examples given suggest possibilities both in and modeled line dividing-strips. The tion of some parts on the end should be keep it in harmony with the side.

aper in the box type gives a basic effect to a rack. In the skeleton type some additional width should be given the bottom of the vertical side and end-filling strips to produce the same effect.

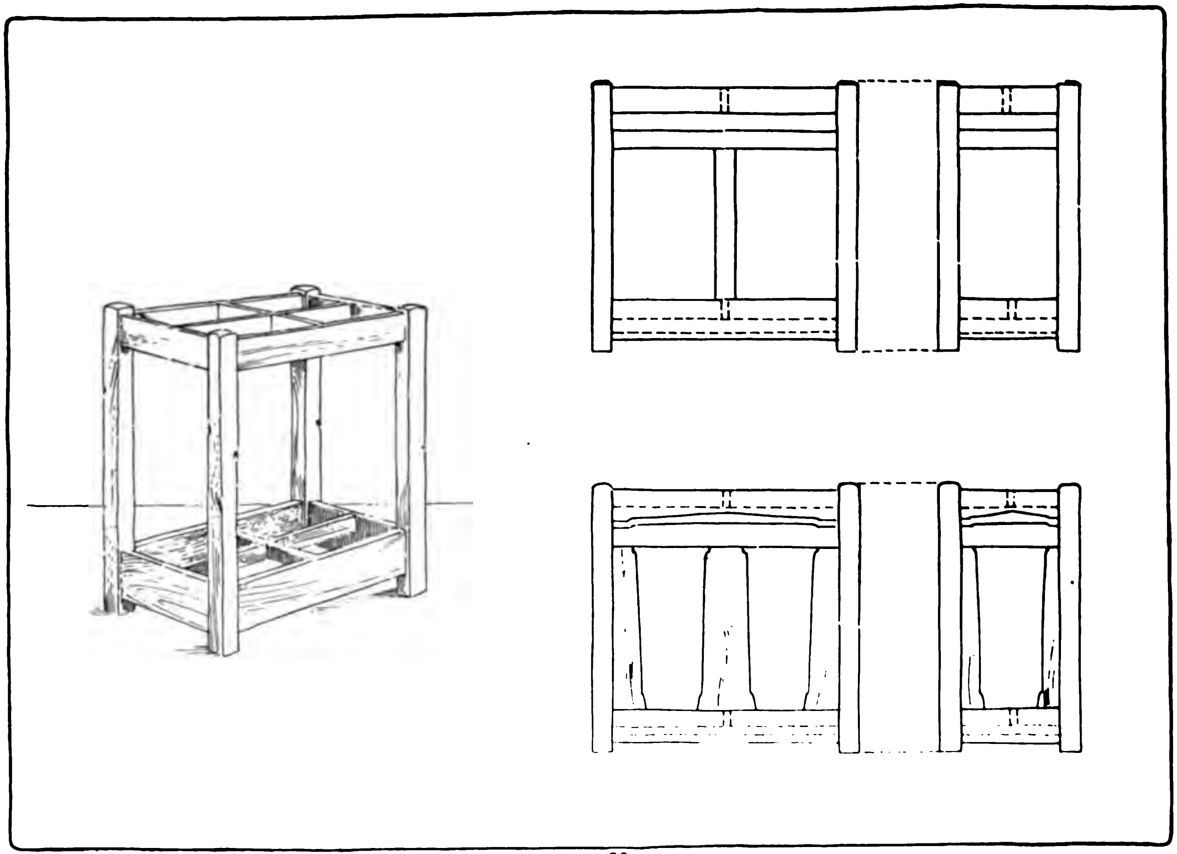


Plate 20

GROUP IV.

BOOK SHELVES.

sign is possible and
simple book shelves
ds with shelves be-
truction. This may
perspective by put-
r more shelves or by
, plain or paneled, as
ack board is not used
must be secured by
-mortise construction
by otherwise fastening
the ends. The lag or
ion alone is not suffi-

book shelf and cab-

from that used in the shelves with a back
at D except that doors are added. A bo
the bottom gives the case a finish whi
shelves do not have and makes it seem m
dividual in character.

No particular suggestion can be give
gards the dimensions of a bookcase excep
that it should be deep enough to take a
which it may have to hold. Eleven inc
all is a good average depth. The pr
of the front will be most pleasing
height is approximately five feet six i
the width is either considerably greate
height to give a running effect or na
produce a strong individuality in app

Much ingenuity may be shown in th
door rail and stile

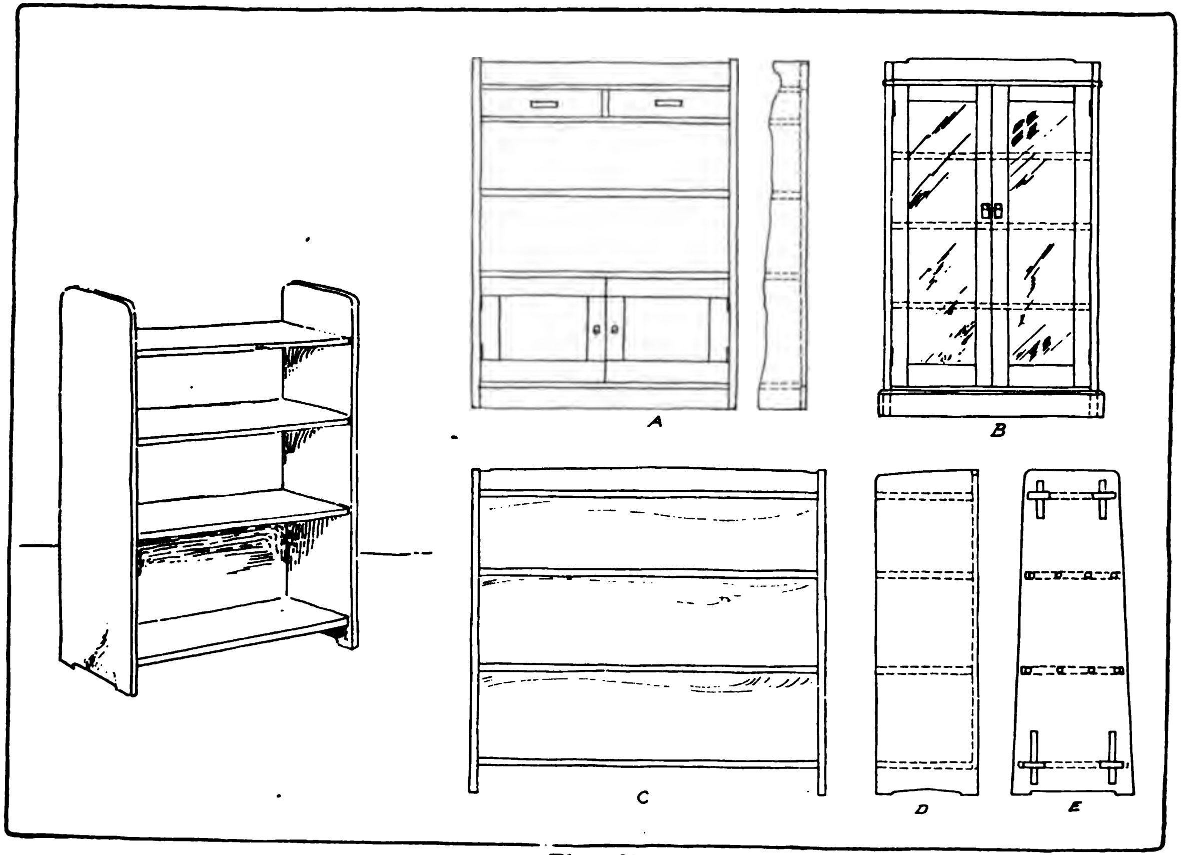


Plate 21

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS

GROUP V.

WALL CABINETS.

place chiefly in
ility rather than
such conditions,
ing in quality as
corative make-up
nsideration, also,
walls and serves
ure. In the liv-
it will find such
efully as a piece
lesign. Its lines
shape and pro-
rominent setting
nd its fittings in
on it has and the

occupy a place nearer the bottom than the top to make it an appropriate hanging piece and because of the extensiveness of the cabinet portion the upper part should be left entirely open.

These ends are accomplished by allowing the back above the top shelf greater width than the width of the apron rail or portion of the back below the bottom of the cabinet or, in some constructions, the space below the bottom shelf. Further assistance is rendered in this direction by leaving an additional open space above the cabinet for bric-a-brac or books. When this space is not utilized in this way the back above the top shelf should be quite wide as compared with the back below the bottom of the main part

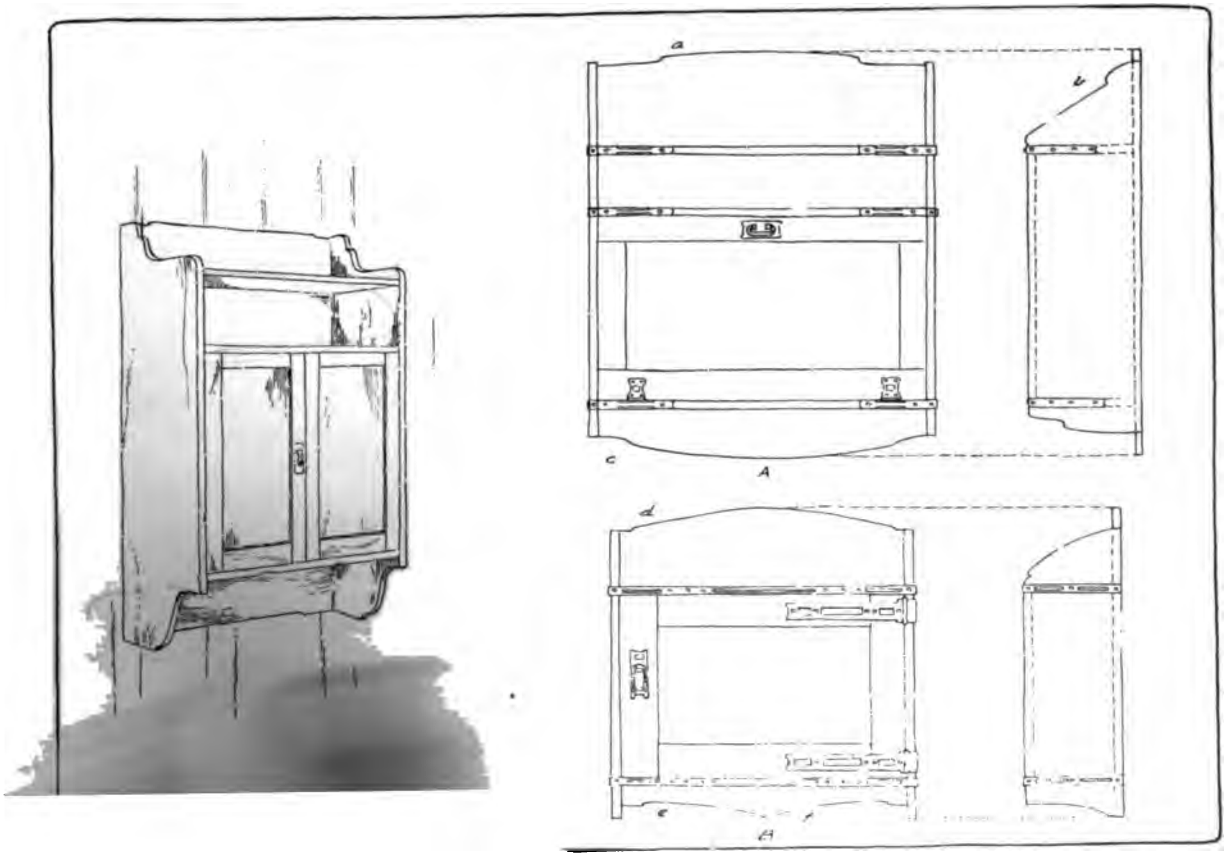


Plate 22

ize the vertical surface and in part to hol closer to the wall than it would otherwise s to be.

To further keep the cabinet in close relat with the wall it should not extend far into room. A depth of six or seven inches sho be regarded as a maximum for this dimensi The wall dimensions may well approximate a square, always, however, avoiding this as an exact shape. The shape of the wall space filled by the cabinet will determine whether the horizontal or vertical dimension should be greatest. From

et to thirty inches will prove enough for e horizontal and vertical distances under ry conditions. The paneling of the door e number of doors will make one of these ces more prominent than the other. Note phasis in width in both of the modifica- rawings because of the long horizontal panels. A vertical stile in the center of either of these doors would greatly change the general appearance by giving more prominence to vertical lines and at the same time by detracting from the interest in width.

GROUP VI.

SCREENS.

for three
ion screen
as a tem-
open mar-
erns only.
ucted of a
with bur-
are to be
. An op-
craftsmen
ion screen
product.
3 shows a
rame con-

is twenty-two inches. The height should be from five feet six inches to six feet.

Modification drawing B shows a more complicated design. Here the vertical space is broken by a cross rail near the top and prominence is given the central panel by increasing its height. In doing this, however, it is well to establish some common horizontal line. Note the position of the division rail in the three panels. The panel material in this screen is tacked on to the edges of a pine frame which is pressed into the screen frame and fastened by means of long screws driven through the stiles from the outside edges. The counter-sunk screw holes may

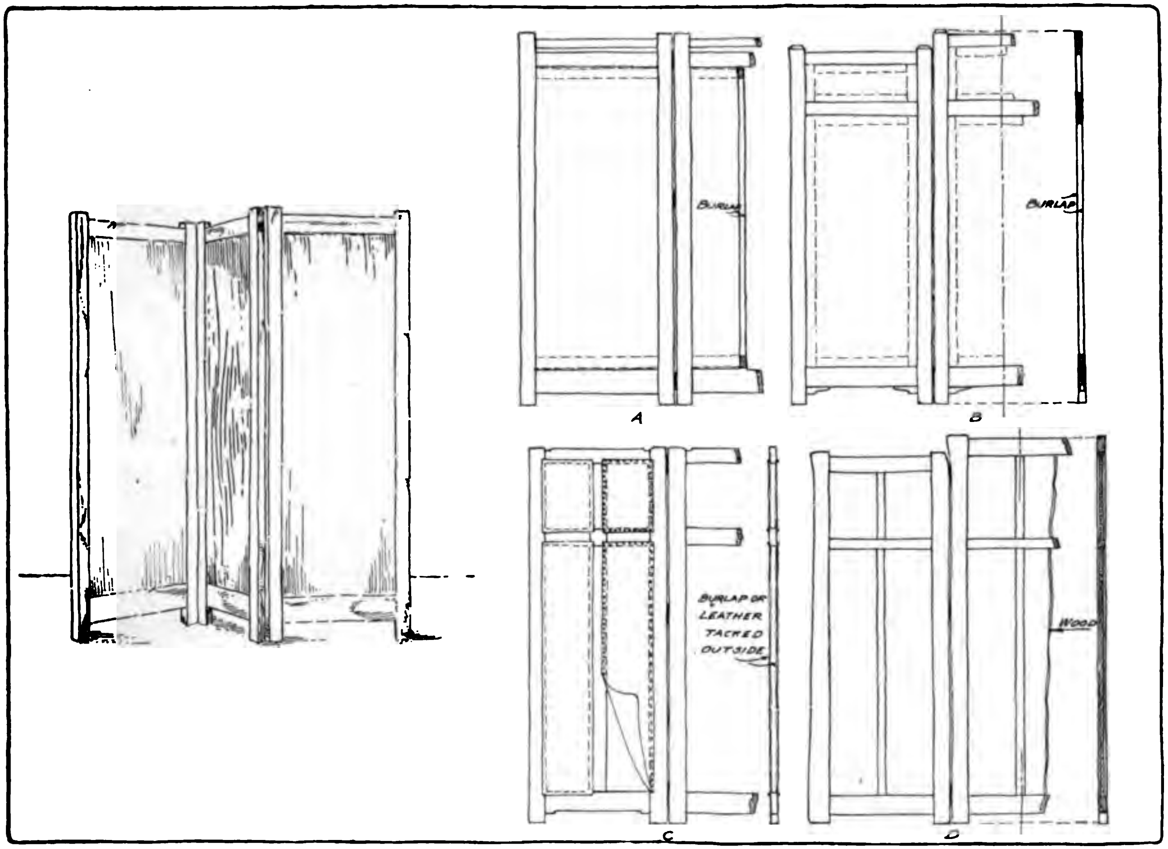


Plate 23

much opportunity for originality in arranging parts and in making each part an attractive element in the whole design as there is in the larger screen. The height of these should be governed by their use. The sewing screen is used by one occupying a sitting position and all parts should be reached comfortably. Care should be taken not to get the lowest pockets too near the floor. The spool rail and shelf should be about twenty inches in height. The panels may be of some
le material upon which the pockets are
or pinned.

a heavier construction is shown in which
anel may be wood. This screen can not
lded up in book fashion. It has this ad-
, however: the middle partition is wide
o permit the manilla folders on the left
well filled and

as to
The
The
ciate
med,
grea
work
scre
woo
fire
call
fire
desi
ized
only
izes

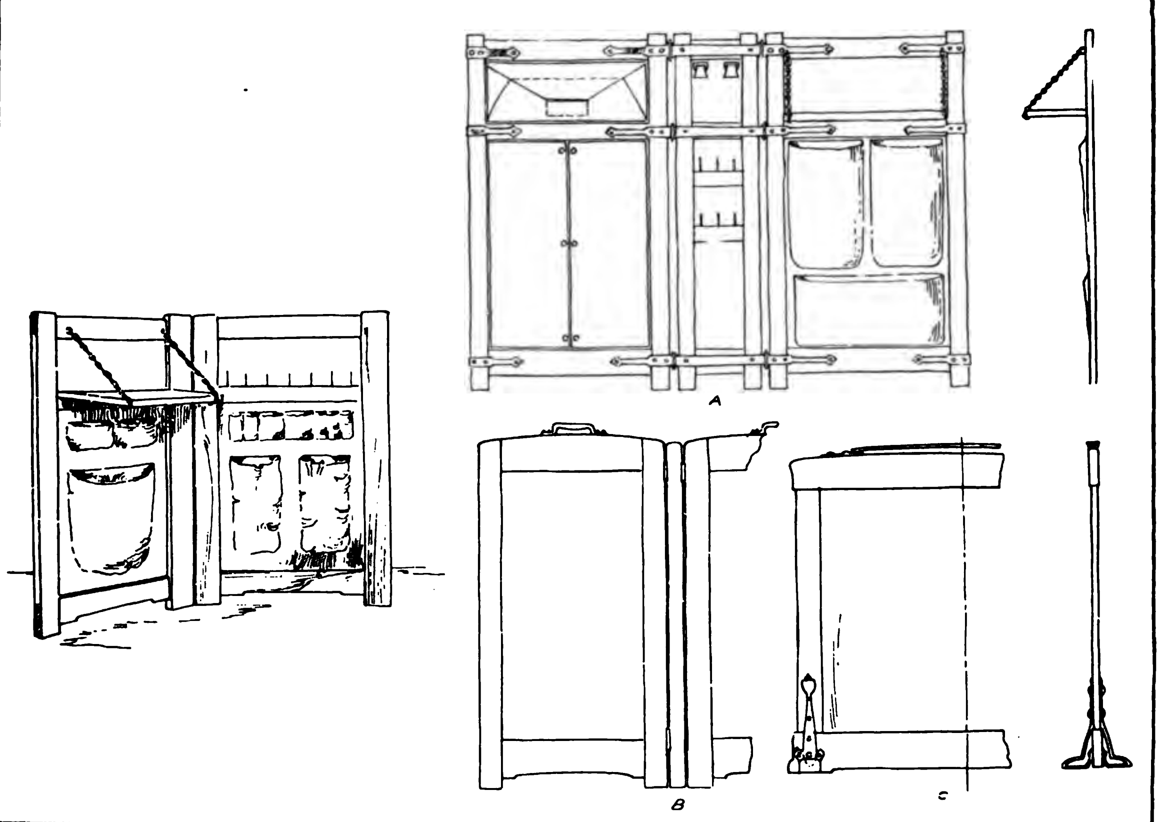


Plate 24

THE NEW YOR
PUBLIC LIBRARY

GROUP VII.

LONG SEATS AND CHESTS.

ch and the
ınd taboret
may easily
ending the
ɔdifications.
ructing one
eces of ma-
and bench

ructions to
ts light con-

structions for designs to be used as piano benches. The least substantial one is shown in the perspective drawing. In this piece the rail should be as wide as is compatible with other dimensions for the sake of rigidity. A close-grained body wood is suggested with another of lighter color for the inlaid parts. The average dimensions for these seats should be: length, four and one-half feet; width, eighteen inches; height, twenty-two inches.

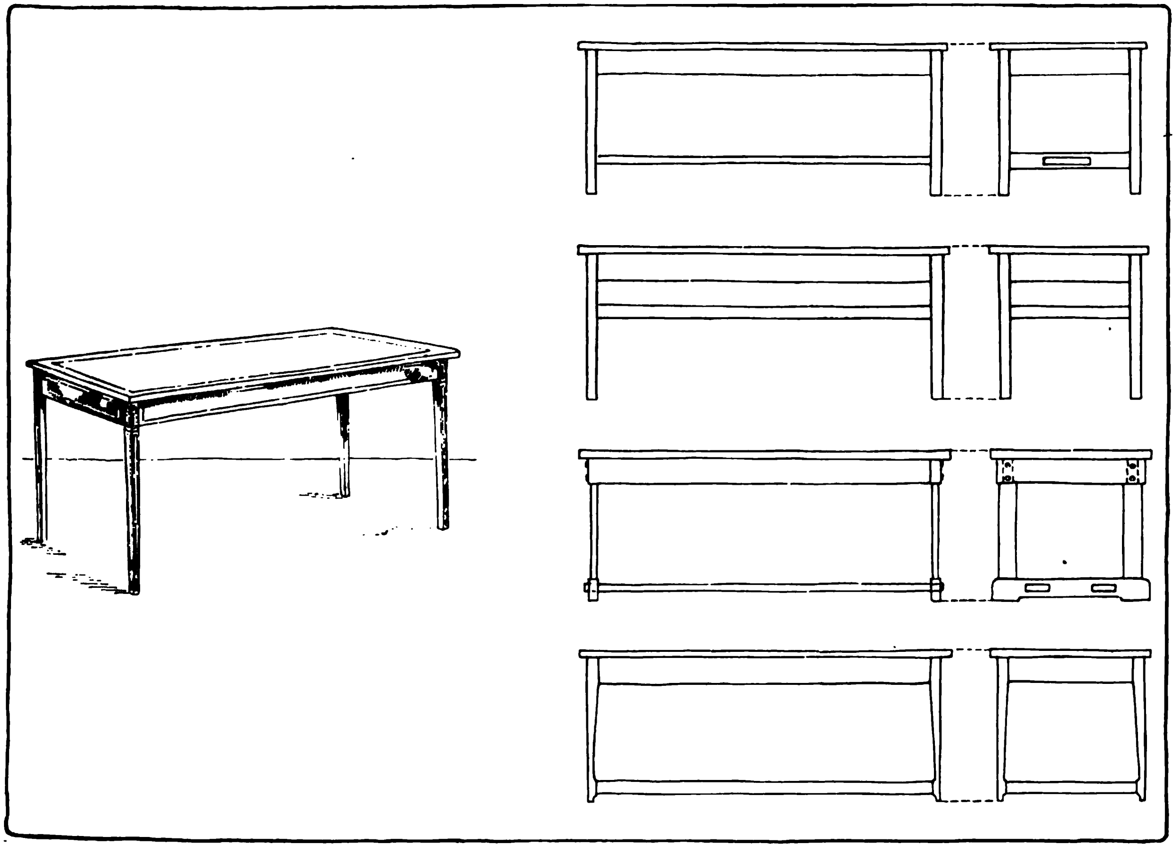


Plate 25

The benches shown in Plate 26 are perhaps most appropriate in halls, libraries and living rooms. An attempt has been made to show moderately light constructions. Those of the box type are given preference, that the space immediately under the seat may be used as a receptacle. Great care should be exercised in determining the depth of the box to get sufficient room inside and to secure good proportions for outward appearance. Note the relation of rails and open spaces in the perspective drawing; likewise the relative widths of rails in the middle modification drawing and the relation of these with the enclosed panel, to the space below the box. Of the three modification drawings

the upper one, perhaps, is the most top heavy. Hence the box should reach to a height some distance below the central vertical panel in the bench and yet not so low as to make the whole resemble a chest. It is not enough in matters affecting space division to stop short of the very best relations. These can only be secured by making many trials.

The heavier elements in the bench permit protruding and keyed ends, the use of which should be less frequently employed in the lighter constructions. The dimensions of the bench and chest need not be very different from those suggested for the seats in Plate 25. In the chest however, a greater width is permissible. The

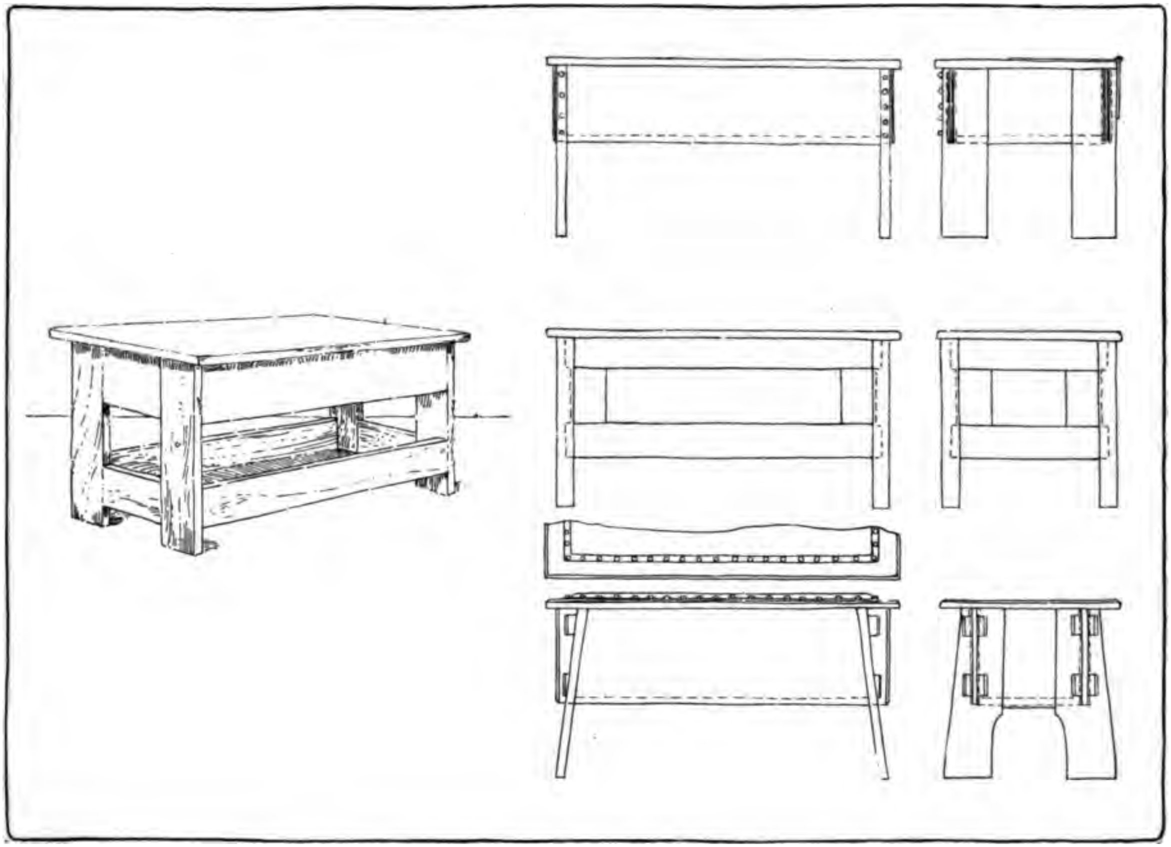


Plate 26

struction may be used here also, but with stiles running below the box for feet rather than separate pieces to serve as such. If the chest comes to the floor a rail or base-board should be used at the bottom to give the whole a foundation and to furnish a moulding between the floor and the vertical sides of the chest. Again a careful study of the panel spaces should be made. The bottom panel rail and the moulding rail together must occupy a greater width than the top panel rail. That portion of the bottom panel rail which shows should be wider, also, than the rail in the center, but not necessarily wider than the upper panel rail.

The top modification drawing could quite as

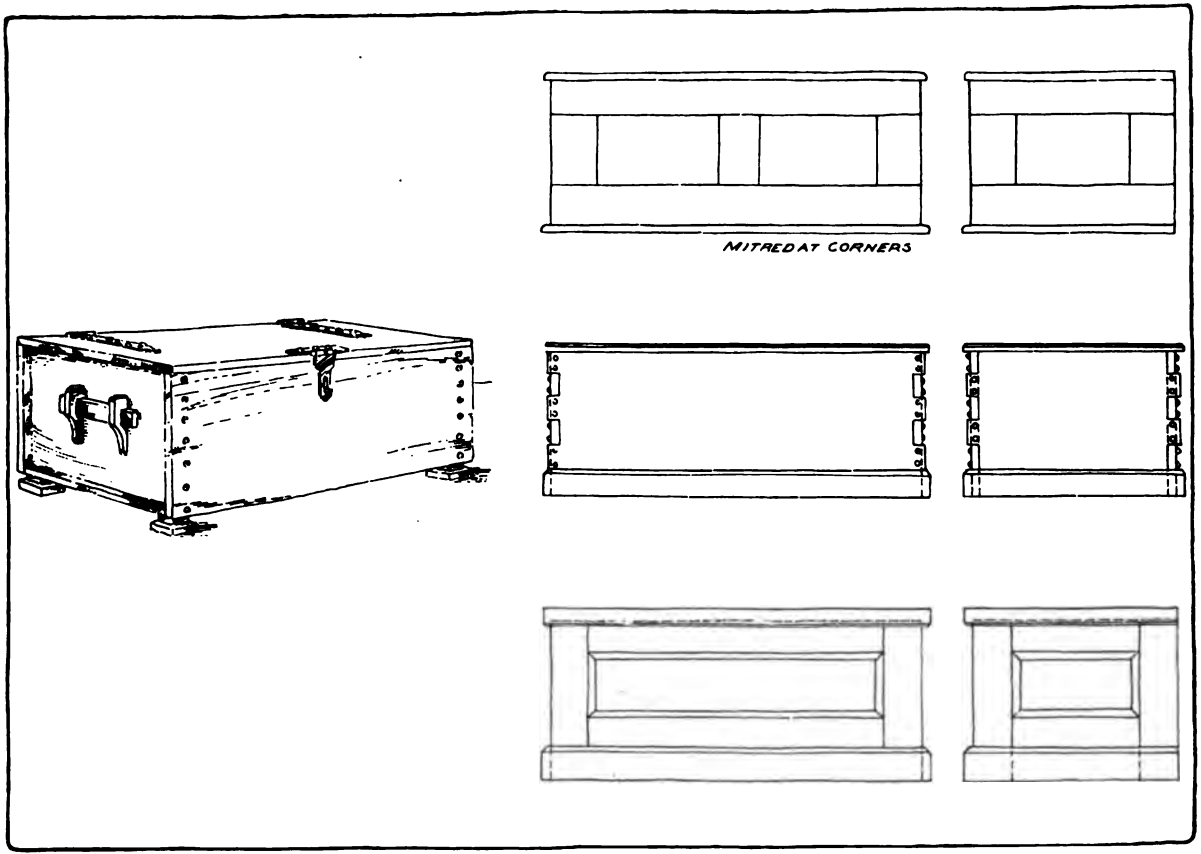


Plate 27

THE NEW Y
PUBLIC LIBR

ASTOR, LENOX AND
TILDEN FOUNDATIONS

GROUP VIII.

SMALL TABLES.

aboret or
The illus-
ll serving
les given
dy or liv-
would ap-
's cabinet.
ing furni-
he article
ood com-
hardly be
able after
any, will

extremes to two feet ten inches would be a natural height range for these small tables. In width a range of about five or six inches is permissible, the extremes being fifteen and twenty inches; the greater width corresponding to the greater height.

In the illustrations shown the legs are made of square stock, and straight. This is desirable and in most cases necessary when the cabinet portion of the table is dropped much below the center point in height. In those in which the cabinet is confined to a place immediately under the top, the legs might be modeled slightly to

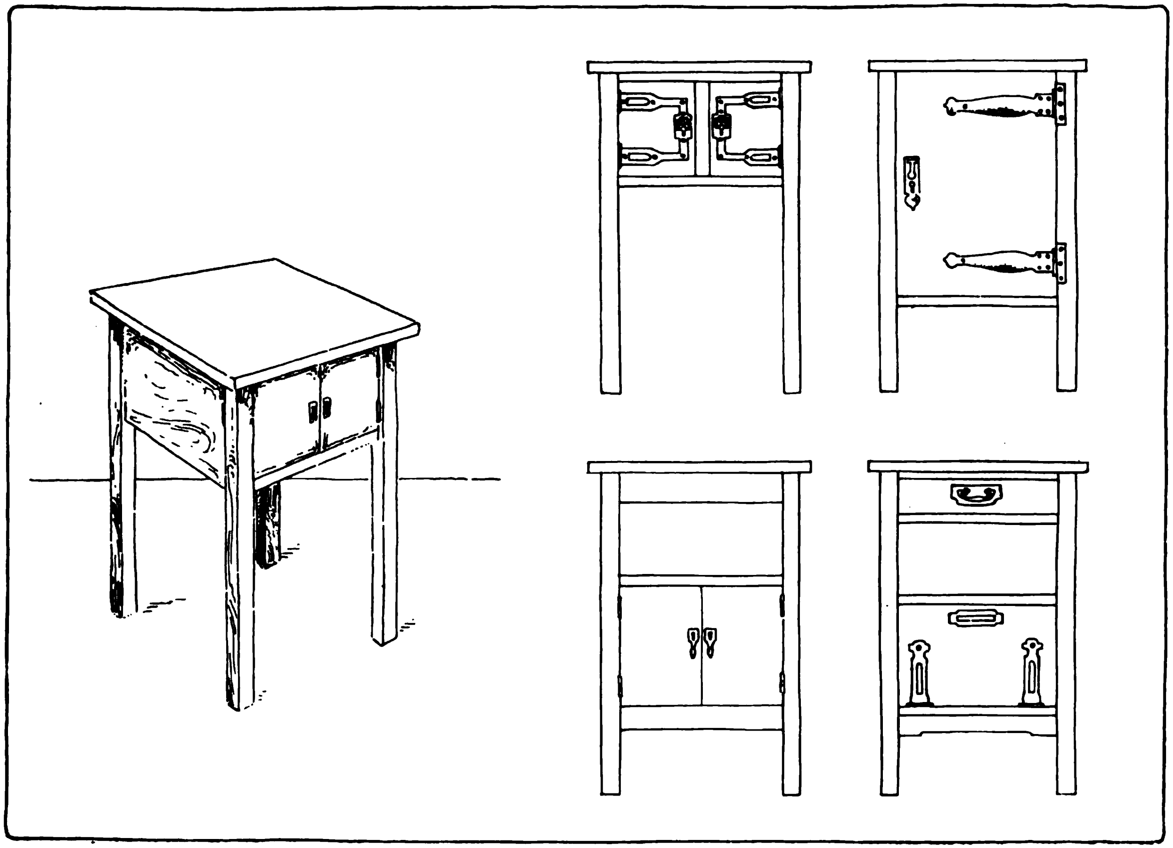


Plate 28

tables. We need not be reminded of the fatigue resulting from standing long when using a wall telephone. For the home as well as the public restroom a telephone table is not only a convenience but a real necessity. Especially inviting and useful is this piece of furniture when it is accompanied by a chair which is made a part of instead of an addition to the table itself. When the chair may be placed within the table and practically if not quite hidden from view, the value of the table is enhanced as an aesthetic as well as a serviceable unit in the room.

As has been the object of practically all the perspective drawings the one on this plate shows one of the simplest possible patterns. When the stool is placed under the table its legs are directly opposite the legs of the table. The telephone when not in use is to be placed within the cabinet and may be hidden from view by

side of th
on the sid
in its pla
the teleph
of the ta
receptacle
pencil, et

The lo
design for
a stool.
it is wit
particular
library w
the table
telephone
or placed
closed.

Thirty
and sixte

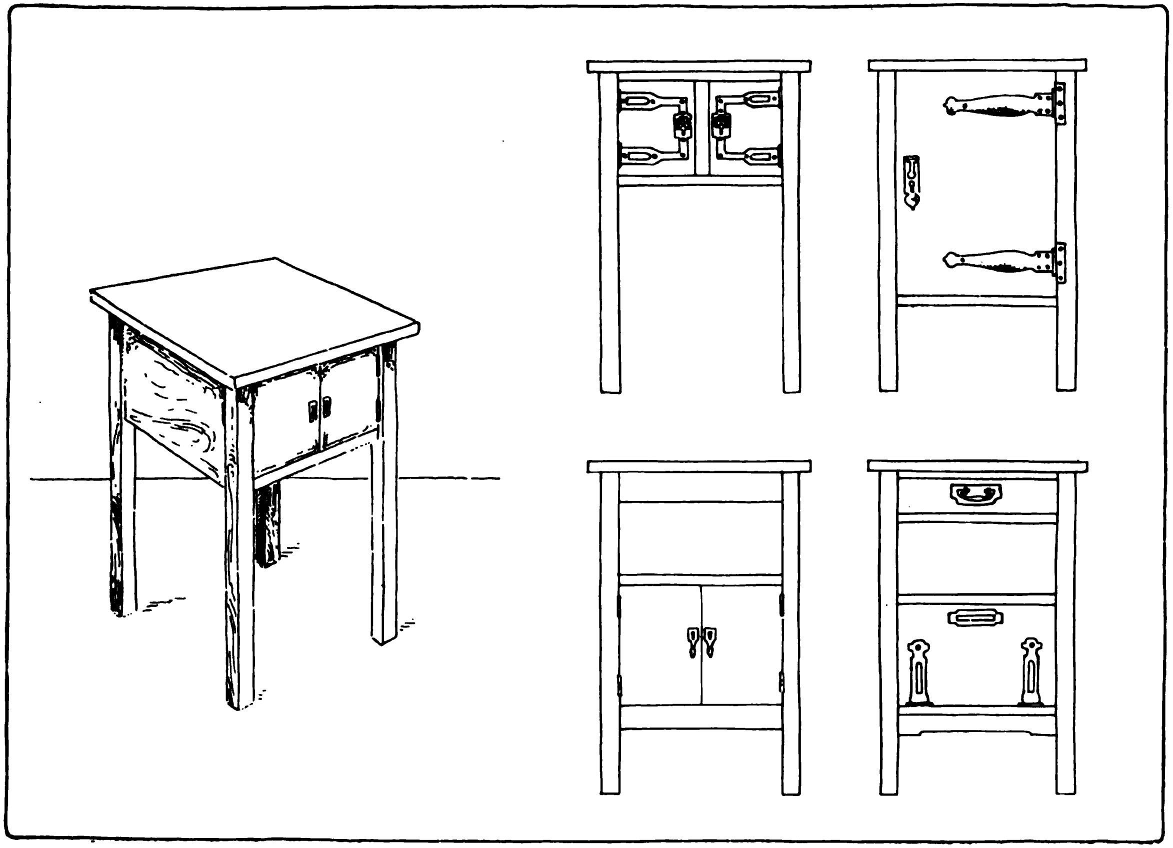


Plate 28

novelty in
en or pri-
A place
ric-a-brac
h in most
r. There
a piece of
hat it will
ys add to
ly placed.
en a room

follows:

height, two feet four inches to two feet eight inches; length, two feet six inches to three feet two inches; width, sixteen inches to twenty-two inches.

In these designs, for the same reason given in the preceding description, much thought may be given to the design of the metal fittings. In fact, if this is not done much will be lost in the appearance of the whole as a special or particularly artistic design. The ordinary stock hardware, even of the most artistic type, would, if used on a unique design of this kind, tend to make the whole incongruous.

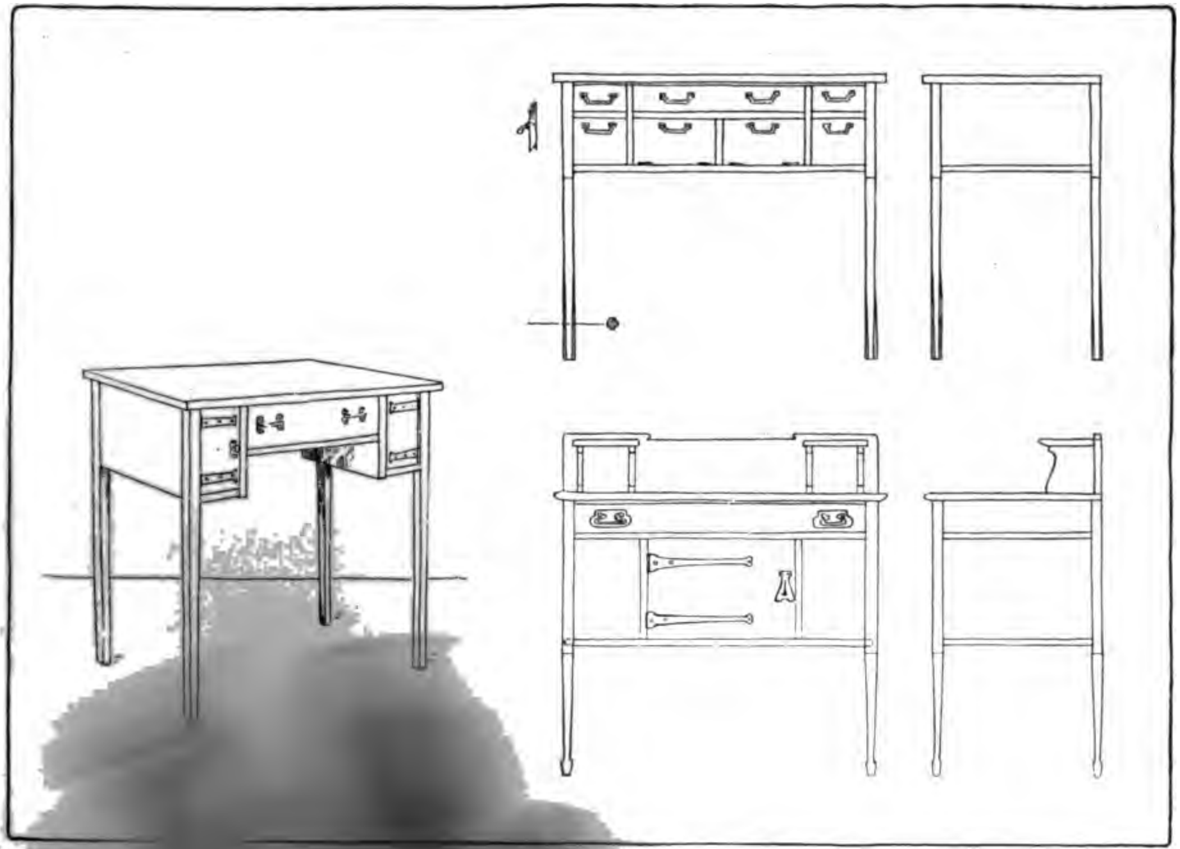


Plate 31

THE N
PUBLIC

GROUP IX.

WRITING AND SERVING TABLES.

The designs shown in Plate 31 are for se tables or sideboards. The perspective dra however, shows a construction which wou equally appropriate for a writing-table i table height was made two feet six inches. a serving table the average height should three feet. In depth there may be a variation from eighteen or nineteen inches up to two feet. The length should approximate three and a half or four feet for the serving table and may increase to as much as six feet for the sideboard. None of the designs in Plate 31 may properly be called sideboards, however, unless it is the one shown in the lower modification drawing which probably would look best with a length not much exceeding five feet.

In construction these designs are only a step in advance of those shown in the plates in Group VIII. However, this step takes one from simple into complex cabinet construction. As soon as a cabinet contains several partitions and both doors and drawers it becomes rather complex in construction. It should be under-

n, therefore, only by those well advanced e art of furniture construction. This book ot dealing with construction except by s of suggestion and consequently little be said upon this subject unless it is coned as a part of the problem of design. construction is always an important factor y design. Poor construction is positively impossible in any good design. Machine construction and commercial methods in general are advised, to make the work as vocational in character as possible. However, the smaller constructions in this book may be made without the use of machinery, altho heavy planing and sawing would be facilitated greatly by its use.

Aside from the points made in any previous portion of this text the following should be emphasized in cabinet construction. Wherever possible the principal horizontal lines in the front view should be carried around onto the ends of the cabinet. This may be noted in the second modification drawing, Plate 31.

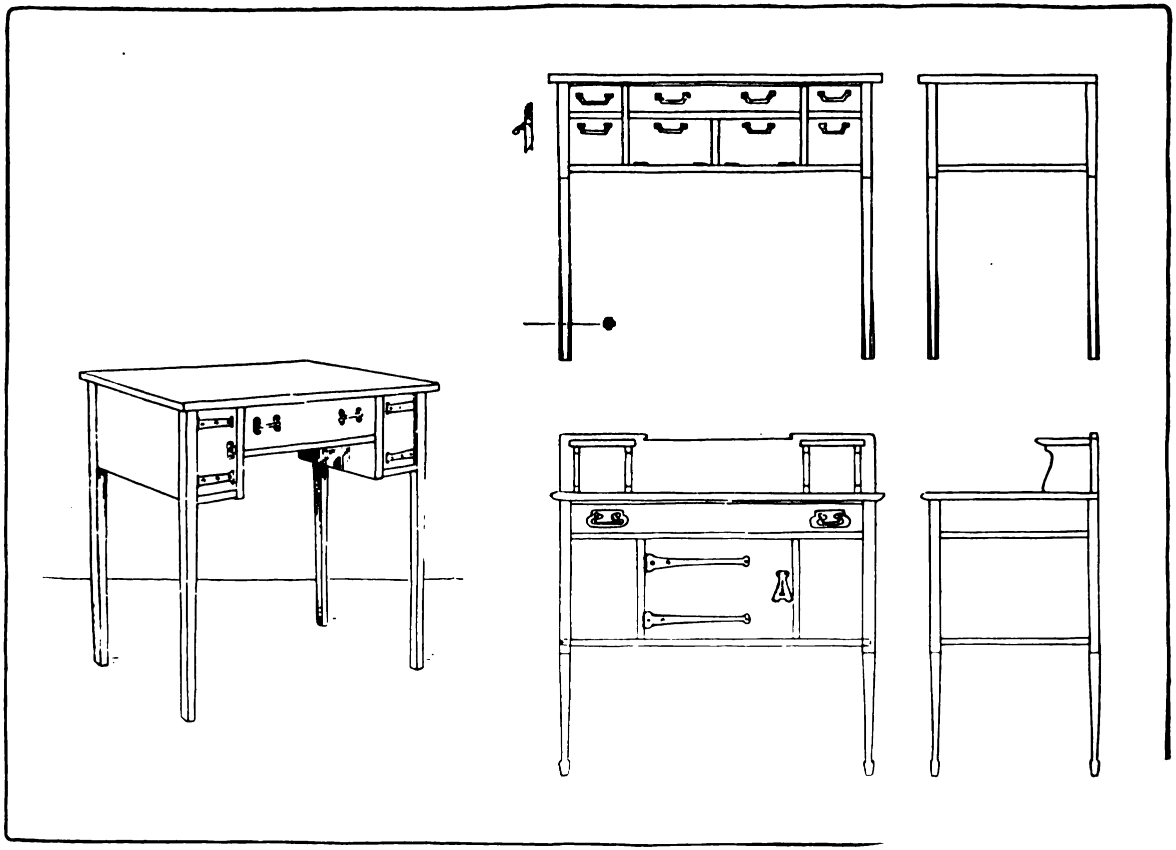


Plate 31

Plate 32 shows rather heavy craft sideboards. Particular attention is called to the harm line in the very simple modeling of lines; the close adherence to the principle of "f of line" set forth in "Problems in Fur Making," by the author. A division of is made to secure a dominant element nea front central point in all designs except the shown in perspective. It will be noted, , that there is no exact geometrical repetition or progression in succeeding similar parts and that, by means of wide or long spaces at the bottom, ity is secured even tho the bottom portion e cabinet is at a considerable distance from oor.

e sideboard should range from five to six en six feet, six inches in length with a of twenty to twenty-four inches and a height of something over three feet. m, however, more than three feet, six inches should be used for the height.

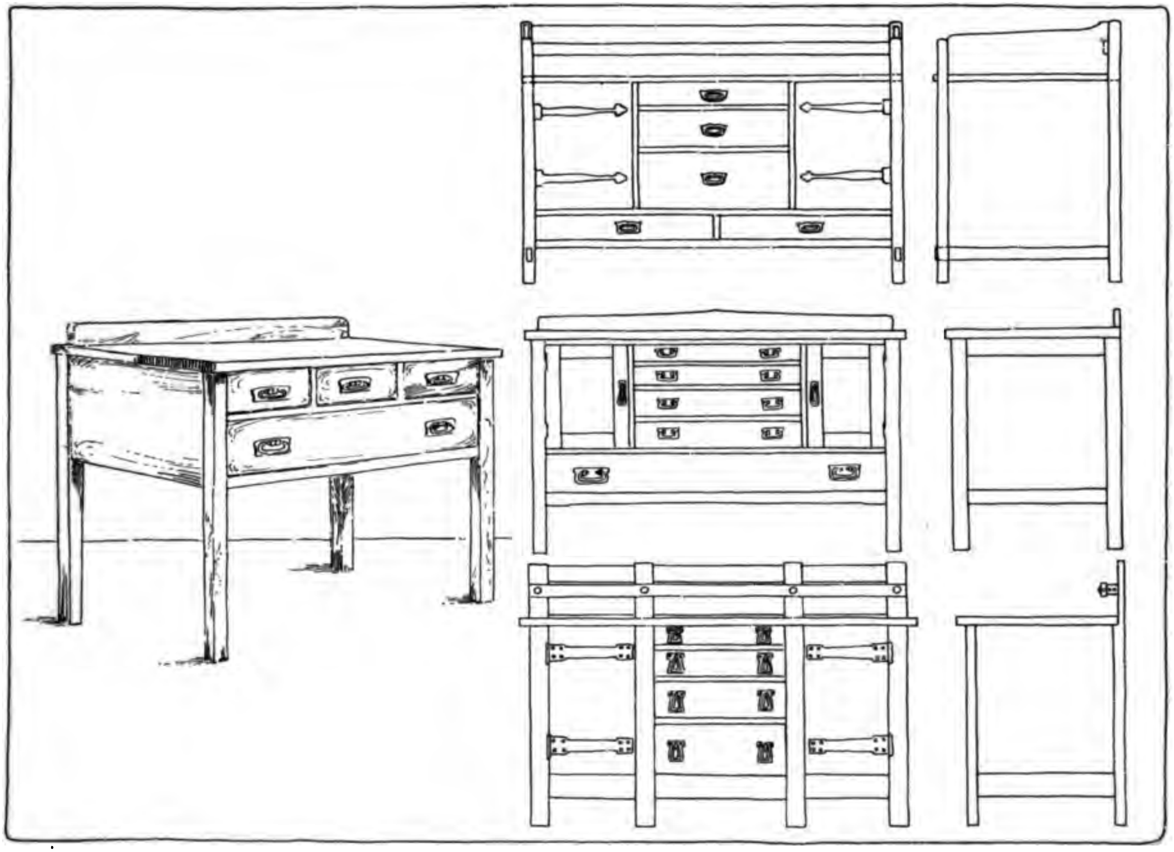
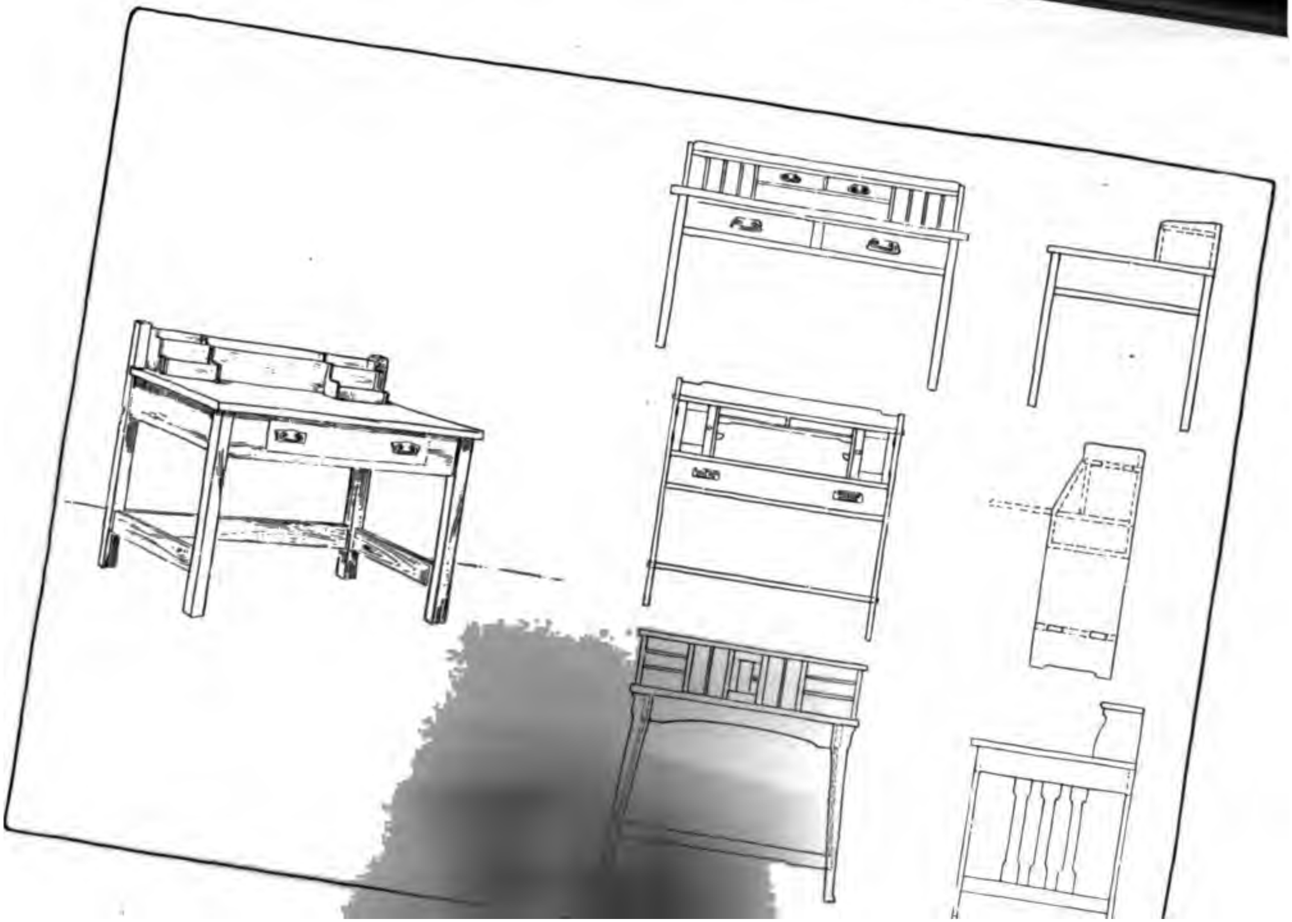


Plate 32

aries shown in
both in elements
may be used as

perspective is
. The top mod-
table to be used
o are more sug-
ng-table usually
oom, or private
asional only for writing, principally, and study incidentally, if at all. No comment need be made upon any features in the designs other than those previously made. The table height should be thirty inches; the depth not less than nineteen or twenty inches and preferably nearer two feet to give plenty of table surface. The length may be made anything within four feet and six inches, but should be studied carefully in relation to the depth, which is the one other variable dimension, to give good proportions.

THE NEW
PUBLIC



THE NEW
PUBLIC LIBRARY

ASTOR, LENOX
TILDEN FOUNDATION

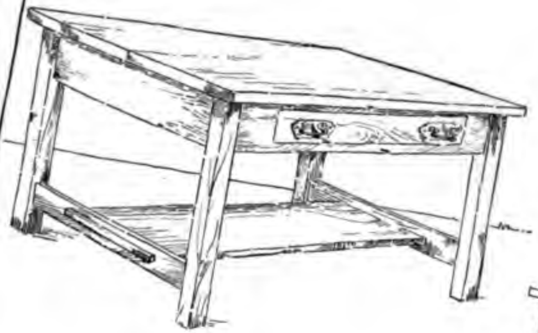
GROUP X.

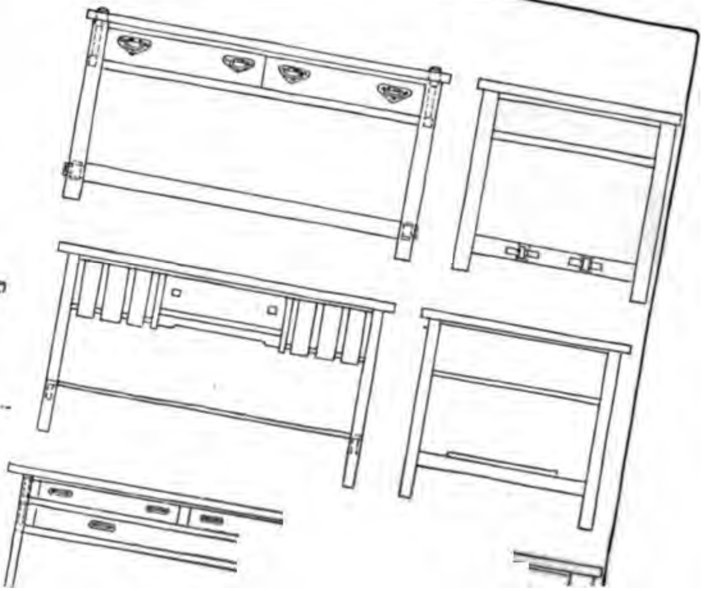
LARGE TABLES.

te piece of con-
Aside from the
ndling of rather
d not be much,
oret and stand
the table which
uction—drawers
ncrease the diffi-
ole and yet not
e the table an
ble problem for
ture problem is
owever, and the
stock should be

and one or more drawers or other compartments. The requisites of good design call for simplicity. It will be necessary, therefore, to combine the three parts of the table above mentioned in the simplest possible way, adding to the bare necessities in the combination that finesse which will result from the use of a few carefully modeled lines and appropriate fittings such, for example, as those constituting a family of rounded corners, beveled corners, protruding parts, etc.

The average dimensions of a library table are: height, thirty inches; length, four to five feet; and width, twenty-eight to thirty-six inches.





[illegible]

GROUP XI.
COSTUMERS.

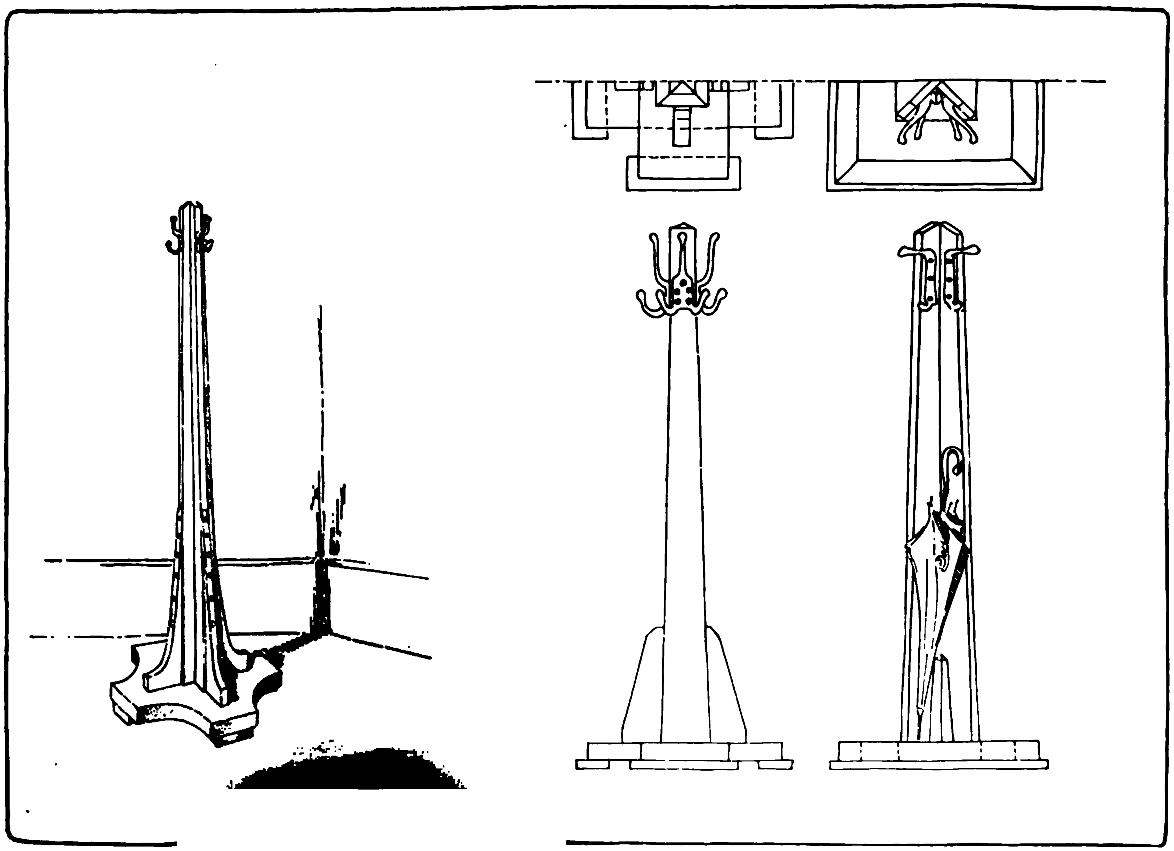
From the standpoint of design the costumer, like the screen, is given comparative attention by furniture designers. Perh is less opportunity for rich effects in for this piece of furniture than in m more conspicuous pieces used in a h this as it may, the writer was much at the time this book was in process o to learn from a hotel proprietor in a western city that a particular costumer used in one of his hotels was procured as the result of a special design. He said that he was unable to find anything in stock which was both simple and artistic. This would suggest that there may be some reason for exercising care in the design of some types of furniture not ordinarily receiving much attention by commercial designers.

The designs shown on Plate 35 are given to suggest the possibilities in simple line patterns. Any one of the three is simply constructed and may be modified in many ways by changing the proportions and shape of parts without changing the pattern essentially.

perspective drawing shows a costumer of two boards halved together lengthwise fastened by screws to a baseboard. The boards on the sides add to the general tiveness of the design by giving it the earance of stability. A vertical post might substituted for the two upright boards.

This suggestion is carried out in the first of the two modification drawings. Here the upright is heavier than necessary. As shown it might be made of four boards fastened together with butt joint or mitred corners. The base i this design is made of two boards halved t gether. These are lifted from the floor by fo other boards which serve as feet.

The design in the right hand modificat drawing is similar to the perspective draw design except that the base is a solid b with a low rail fastened near its edge to as the outside of a tray for umbrellas rubbers.



ate 35

vn in the design
e shown are all
orge shop. The
such as to allow
from the lowest
r bottom board.
hall. Those in

Plate 35 may be used in this part of the home but are more particularly appropriate for rooms. A much heavier construction is shown in Plate 36. Nothing need be said concerning this, however, in addition to what has been offered in connection with Plate 35 designs.

THE NEW

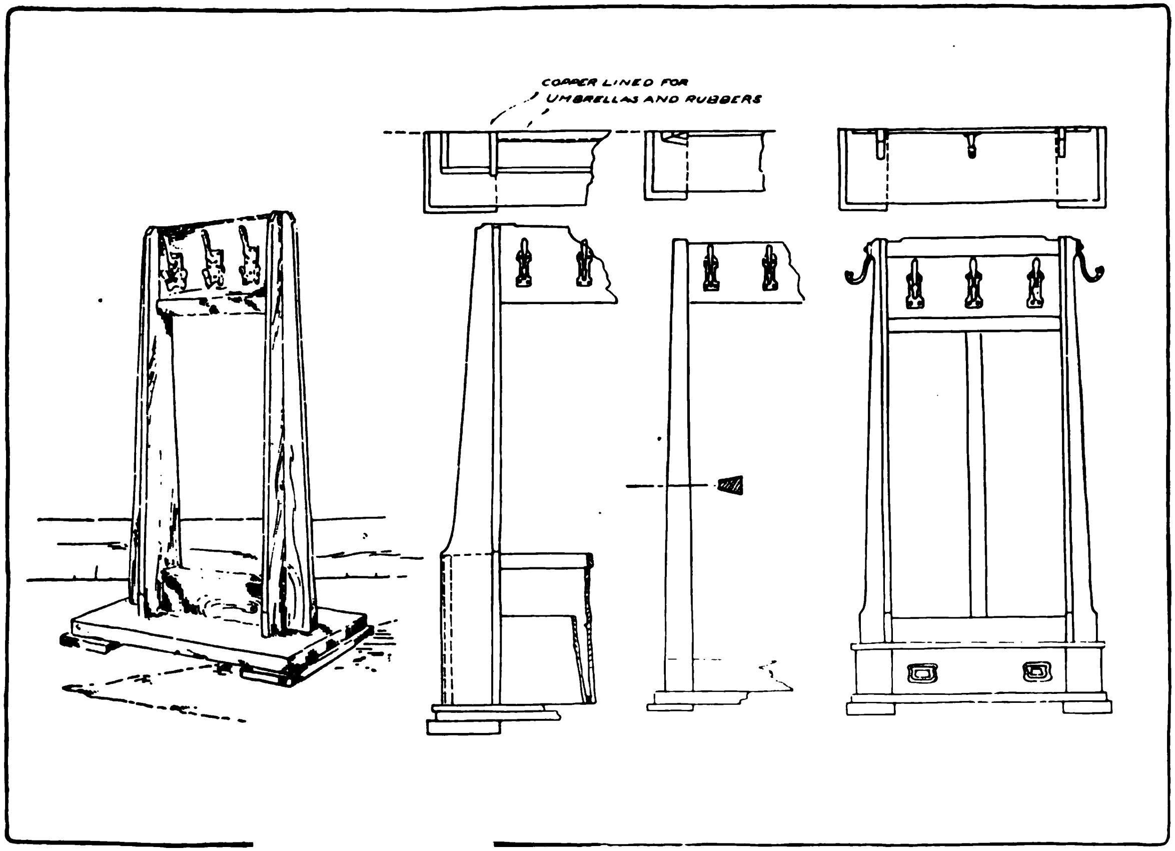


Plate 36

THE NEW
PUBLIC LIBRARY

ASTOR, LENOX AND

GROUP XII.

CHAIRS.

Much attention has been given to the
of chairs in Plates 37 to 40 inclusive.
struction the chair offers a simple
framing problem. The problem of d
somewhat complex because of the man
open spaces which must be filled appro
with rails. To conform to the princ
design governing the breaking up of space
and at the same time introduce lines which will make for strength in the construction makes the problem of chair design an interesting one.

Plate 37 shows designs for living-room or dining-room chairs. The construction is light in all cases. It is believed that strength is secured, however, by careful filling of side spaces below the seat and by the shape given to the back legs.

he perspective drawing and the lower mod-
ation drawings illustrate the first of these
plans. All drawings emphasize the second
n in the comparatively straight but bracing
given to the back legs from the seat to the
r.

t is not uncommon to see one lean back in a chair. This puts an extra strain upon the framework below the seat from the back to the front of the chair. The side frames, therefore, must be securely braced. At least two rails should be used. They should be as far apart as possible. It is well also to connect them either by vertical strips or by a diagonal strip as shown in the lower right hand modification drawing.

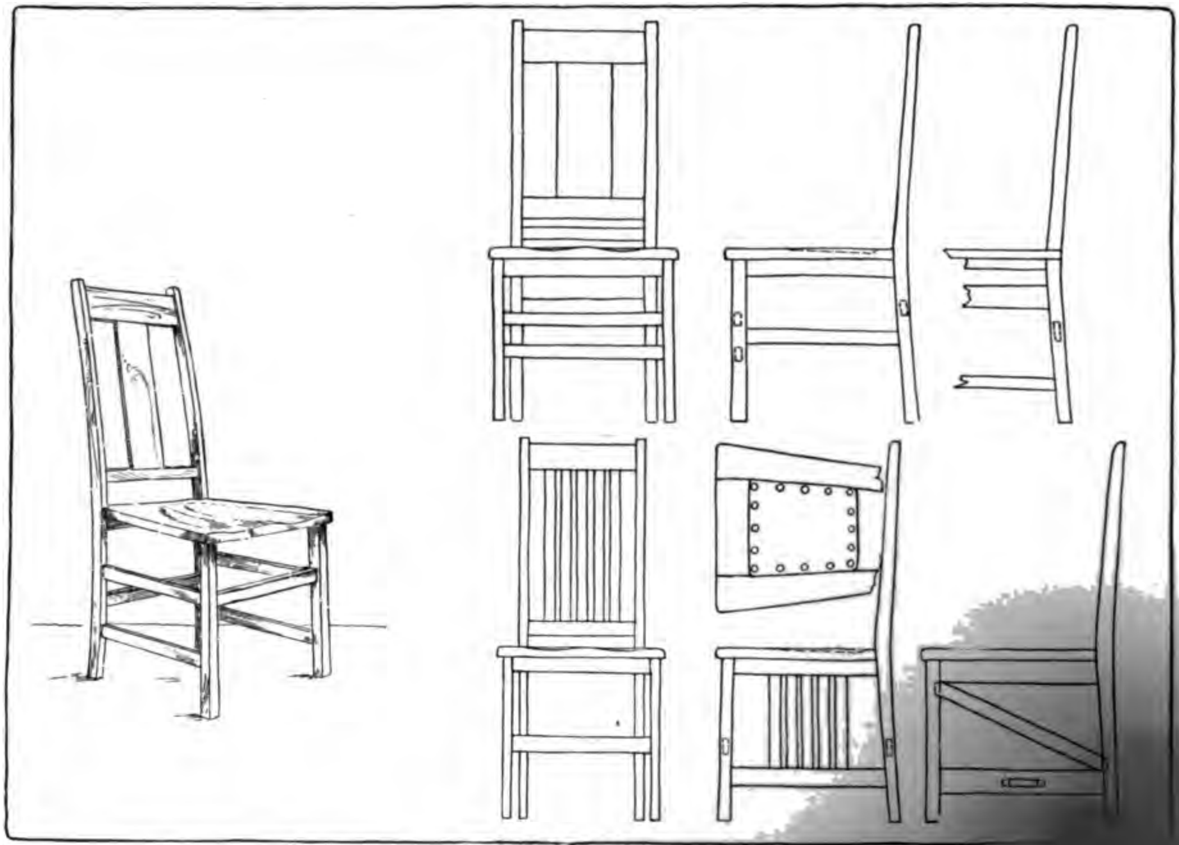


Plate 37

the present day living-room used in the frame work but as the rails are wider than those in the dining-room chair sufficient strength is secured. It will be noticed

THE NEW
PUBLIC LIBR
ASTOR

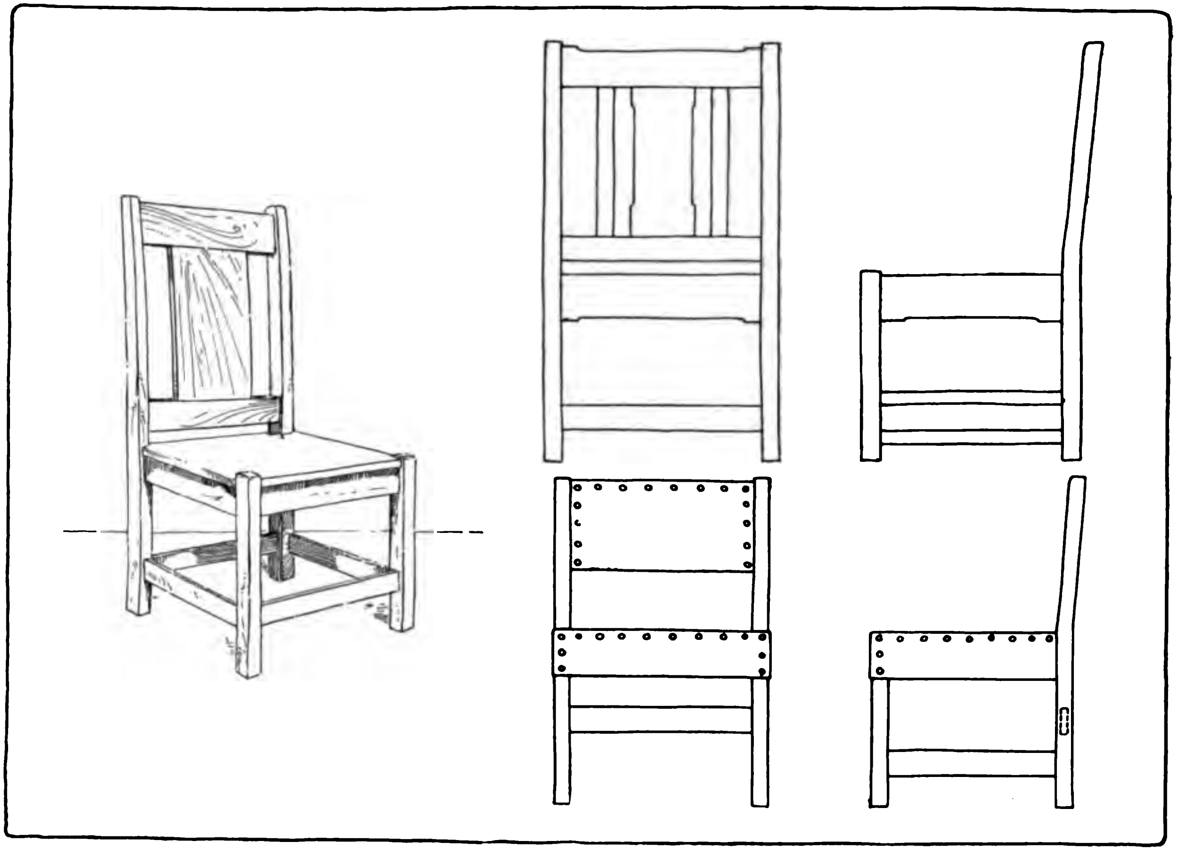


Plate 38

Plates 39 and 40 give suggestions for large upright and rocking-chairs. As our homes are usually furnished today such chairs find their places in the library and living-roo cipally. For the most part these chai be fitted with seat and back cushior little attention is given to the placing in the backs above the seat line except purpose of strength. In the upright ch sides are well filled with rails and slats. is not so much for strength as for the purp of unity in design. The bulkiness of such chairs calls for a rather heavy filling of spaces.

It will be noticed that the rocking-chair side mes are not so securely braced as were the frames of most of the upright chairs, espe lly those for dining-room use. The fact that rocker acts as a tie rod at the bottom and t there is little possibility of racking a ker when one leans back in it is an explana- of this modification.

THE NEW YORK
P B LIBRARY

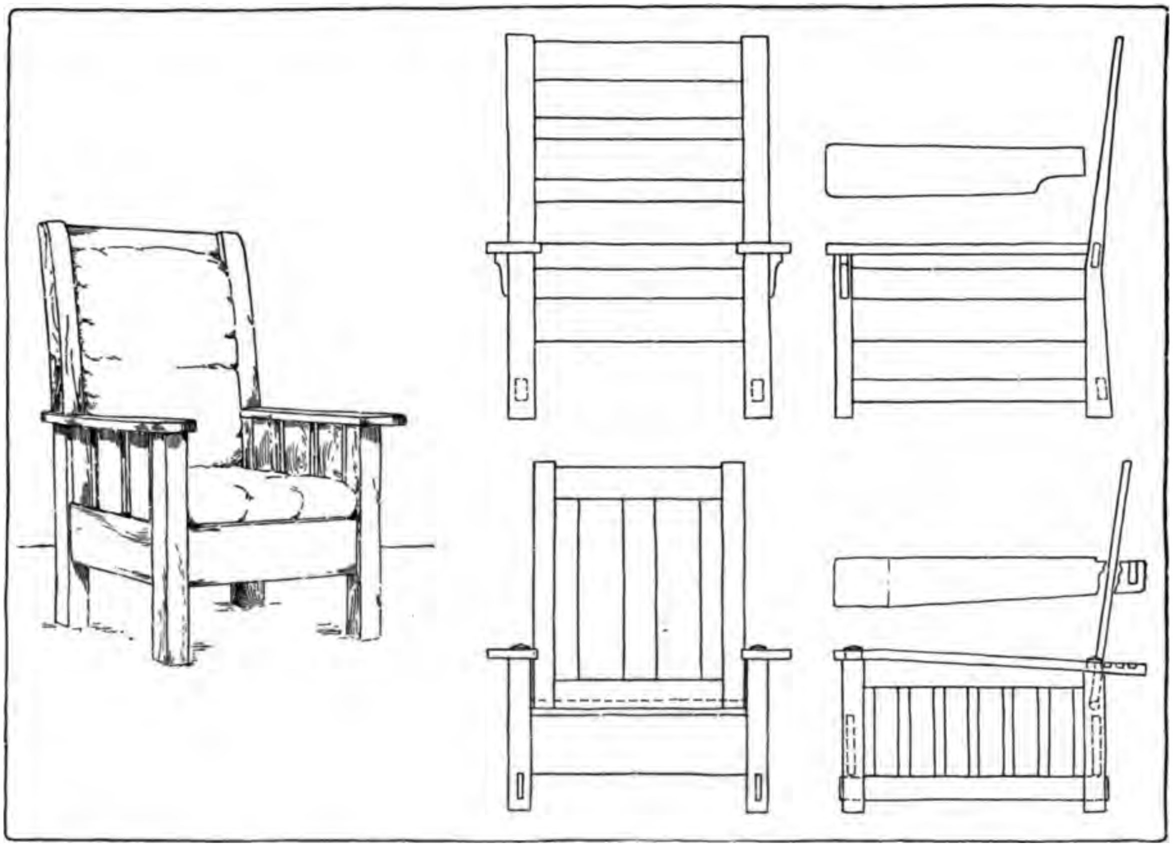


Plate 39

The dimensions of chairs are given below:

Chairs of the dining-room type:
- Seat height, 18 inches.
- Width, 18 or 19 inches.
- Depth, 17 or 18 inches.
- Height of back, 3 feet, 4 inches to 3 f
  8 inches.

Medium sized living-room chairs:
- Seat height, 16 or 17 inches.
- Width, 17 to 20 inches.
- Depth, 16 to 20 inches.
- Height of back, 3 feet to 3 feet, 6 inches.

Heavy living-room chairs:
- at height, 15 to 17 inches.
- idth, 18 to 22 inches.
- pth, 20 to 26 inches.
- ight of back, 3 feet to 3 feet, 6 inches.

s (light):
- at height, 14 to 16 inches.
- idth, 15 to 17 inches.
- Depth, 16 to 18 inches.
- Height of back, 2 feet, 6 inches to 3 feet

Rockers (heavy):
- Seat height, 14 to 16 inches.
- Width, 20 to 26 inches.
- Depth, 24 to 30 inches.
- Height of back, from 30 inches to 3 feet

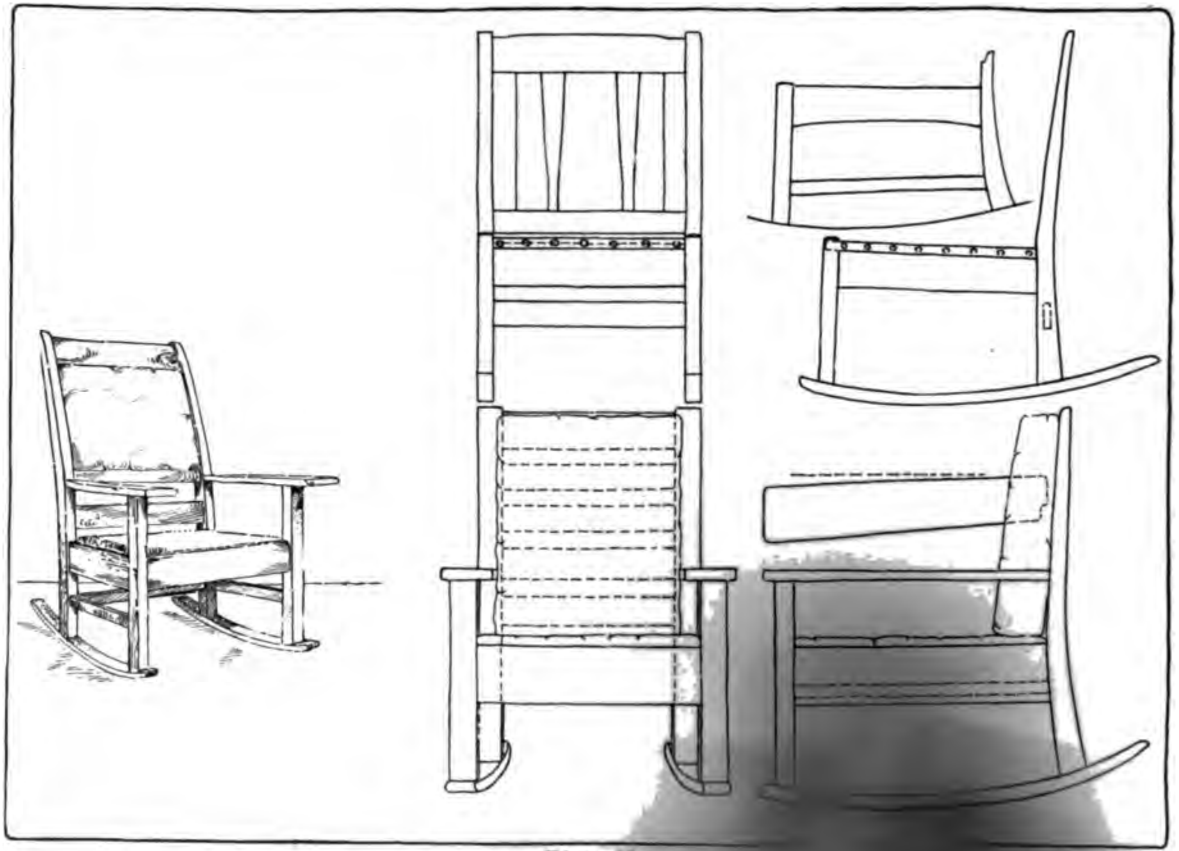


Plate 40

THE AVERAGE SIZES OF FURNITURE.

The following appendix gives the average sizes of furniture as constructed in commercial shops. The author is indebted to Mr. E. H. Harlacher, Inspector of Manual Arts for the State of Maine, for a copy of the appendix which originally appeared in THE FURNITURE MANUFACTURER AND ARTISAN.

Wardrobes.

Width.	*Depth.*
3 ft.	1 ft. 8 in.
3 ft. 6 in.	1 ft. 8 in.
4 ft.	1 ft. 9 in.
4 ft. 6 in.	1 ft. 10 in.
5 ft.	1 ft. 10 in.

Height of wardrobes varies from 6 ft. 8 . 7 ft. exclusive of top ornamentation.

Dressers.

Tops.	*Width.*	*Depth.*
	3 ft. 6 in.	1 ft. 10 in.
	3 ft. 9 in.	1 ft. 10 in.
	4 ft.	1 ft. 11 in.
	4 ft. 6 in.	2 ft. 1 in.

Height from floor to top about 2 ft. 10 in.

Chiffoniers.

Tops.	*Width.*	*Depth.*
	2 ft. 6 in.	1 ft. 8 in.
	2 ft. 10 in.	1 ft. 8 in.
	3 ft.	1 ft. 10 in.
	3 ft. 4 in.	1 ft. 11 in.
	3 ft. 6 in.	2 ft.

Height from floor to top 3 ft. 6 in. to 4 ft.

Toilet Tables.

Width.	*Depth.*
2 ft. 8 in.	1 ft. 8 in.
2 ft. 10 in.	1 ft. 8 in.
3 ft. 2 in.	1 ft. 9 in.
3 ft. 4 in.	1 ft. 9 in.
3 ft. 6. in.	1 ft. 10 in.

ght from floor to top 2 ft. 6 in.

Side Tables.

Tops.	*Width.*	*Depth.*
	3 ft.	1 ft. 7 in.
	3 ft. 2 in.	1 ft. 8 in.
	3 ft. 4 in.	1 ft. 10 in.
	3 ft. 9 in.	1 ft. 10 in.
	4 ft.	1 ft. 10 in.

Height from floor to top 3 ft.

Sideboards.

Tops.	*Width.*	*Depth.*
	4 ft.	2 ft.
	4 ft. 6 in.	2 ft. 1 in.
	5 ft.	2 ft. 1 in.
	5 ft. 6 in.	2 ft. 1 in.
	6 ft.	2 ft. 2 in.

Height from floor to top 3 ft. to 3 ft. 6 in.

CHINA CLOSETS.

Width.	*Depth.*
3 ft.	1 ft. 2 in.
3 ft. 6 in.	1 ft. 3 in.
3 ft. 9 in.	1 ft. 3 in.
4 ft.	1 ft. 4 in.
4 ft. 6 in.	1 ft. 4 in.

Height from floor to top 5 ft. to 5 ft. 6 in.

BOOKCASES.

Tops.	*Width.*	*Depth.*
	2 ft. 6 in.	1 ft.
	3 ft. 6 in.	1 ft. 1 in.
	5 ft.	1 ft. 2 in.

Height from floor to top of case 4 ft. 2 in. to 5 ft.

WRITING-TABLES.

Tops.	*Width.*	*Depth.*
	3 ft. 2 in.	1 ft. 9 in.
	3 ft. 4 in.	1 ft. 10 in.
	3 ft. 6 in.	1 ft. 11 in.

Height from floor to top 2 ft. 6 in.

HALL SEATS.

Length, 3 ft. 6 in. to 6 ft.
Height of seat, 1 ft. 6 in.
Depth of seat, from 1 ft. 6 in. to 1 ft. 8 in.

HALL TABLES.

Tops.	*Width.*	*Depth.*
	2 ft. 10 in.	1 ft. 6 in.
	3 ft. 2 in.	1 ft. 6 in.
	3 ft 6 in.	1 ft. 7 in.

Height from floor to top 2 ft. 8 in. to 2 ft. 10 in.

HALL CHAIRS.

Width, 1 ft. 6 in. (front of seat).
Depth, 1 ft. 5 in. (including back).
Height of seat, 1 ft. 6 in.

N. B. Backs of hall chairs are more upright than others, and the back rails may be straight, not curved.

DINING CHAIRS.

Width, 1 ft. 6 in. to 1 ft. 7 in. (front of seat).
[illegible] 5½ in. (including back).
[illegible] 1 ft. 6 in.

CHAMBER-CHAIRS.

Width, 1 ft. 5 in. (front of seat).
Depth, 1 ft. 4 in.
Height to top of seat, 1 ft. 5 in.

MUSIC-BENCH.

Top, 1 ft. 5 in. by 3 ft. 2 in. (seats players).
Height from floor to top of seat, 1 ft. 8 in.

The depth of the chair from back to front with the height of the seat from the floor. erage rule is that the sum of the seat plus ight equals 35 inches.

slope of the back of a chair without arms not be more than a quarter of the depth seat.

he case of a chair with arms one-third to one-half of the depth of seat is taken.

INDEX FOR
PRINCIPLES, RULES AND EXPEDIENTS.

	Page	Paragraph
An important principle	13	
Applied design	7	1
Architecture	7	3
Ascending series for rhythm	8	3
Balance	9	
Balance due to symmetry	9	1
Balance—a more subtle type	9	1
Blocking-in process	13	1
Center of gravity	19	1
Center of weight	18	2
Character in design	17	1
Concentric curves	17	4
Continuity of line in a design	19	3
Construction material	11	2
Constructive design	7	2
Curved lines for rhythm	8, 16, 17	3
Curves—kind to use	16	2
Curves which "ramble"	17	1
Decorative design	12	
Definite requirements	11	1
Design (applied)	7	1
Design (constructive)	7	2
Design (decorative)	12	2
Design (furniture)	7	2
Design (parent)	7	3
Design (principles)	8	2
Design (pure)	7	1
Descending series for rhythm	8	3
Details worth considering	16	
Division of space areas	19	1
Dominant division	14	1
Dominant forms in nature	16	3
Duplication unnecessary	10	3
Embellishments	12	2
Enrichments	12, 20	2, 3
Elongation of parts	19	2

	Page	Paragraph
Expedients	10	4
Exaggeration		
Factors important and governing	1	
Family of line	1	
First main consideration	1	
Flow of parts		
Finish of wood	2	
Fittings, metal	2	
Furniture design	7	4
Geometric center	18	2
Governing factors	11	1
Grace	16	2
Harmony	10	2
Harmonious whole a unit	10	2
Helps	11	
Important factors	11	1
Indefinite requirements	11	1
Levels	20	1
Lever illustration for balance	[illegible]	[illegible]
Lines—modeling of	10, 16	3, 4
Loud design	[illegible]	3
Material of construction	[illegible]	2
Measure	[illegible]	[illegible]
M ure—unit of	18	4
anics of the designer	16	1
ment of parts	8	3
l fittings	12	2
ling of lines	10, 16	3, 4
ral forms	16	5
for a design	11	1
et of curves	17	2
Orthographic projection	19	3
Orthographic projection drawing	19	3
Panels—arrangement of	20	1
Parent design	7	3
Perspective view	19	3
Point-of-view in a design	19	3
Positive points	16	4
Practical helps	11	
Principles of design	8	2
Principle (important)	13	
Principle (three-part)	13	1
Process of blocking-in	13	1
[illegible] of line	10	2
Rails—width of	18	3
Requirements—Definite and Indefinite	11	1

	Page	Paragraph
Rest (apparent)	9	1
Rest (real)	9	1
Rhythm	8	3
Second main consideration in a design	11	2
Similar lines and parts for harmony	10	3
Some details worth considering	16	
Space area division	19	1
Spaces—width of	18	3
Special case in three-part design	14	3
Subordination in three-part design	13	2
Succession of similar parts for rhythm	8	3
Sharp curve	16	2
Stability in design	9, 18	1, 2
Symmetry	9	1
Third main consideration in a design	11	3
Three-part principle in design	13	1
Three-part design—special case	14	3
Uniformity of parts destroys unity	13	2
Unit of measure	18	4
Unity	10	1
Unity destroyed by uniformity	13	2
Use for a design	11	1
Vivacity	16	2
Vulgar design	17	3
Weight—use of in design	18	1
Width of rails and spaces	18	3
Wood finishing	20	3

Woodworking Projects—Working Drawings Ready for Use

PROJECTS FOR BEGINNING WOODWORK AND MECHANICAL DRAWING. By Ira S. Griffith. A work book for the use of students in grammar grade classes. It consists of working drawings and working directions. The projects are such as have proven of exceptional service where woodworking and mechanical drawing are taught in a thoro, systematic manner in the seventh and eighth grades. The aim has been to provide successful rather than unique problems. The 50 projects in the book have been selected and organized with the constant aim of securing the highest educational results. The book is especially suited for use in connection with "Essentials of Woodworking" by the same author. Price, 75 cents.

ADVANCED PROJECTS IN WOODWORK. By Ira S. Griffith. This book is similar to "Projects for Beginning Woodwork and Mechanical Drawing", but is suited to high school needs. It consists of fifty plates of problems and accompanying notes. It is essentially a collection of problems in furniture making selected or designed with reference to school use. On the plate with each working drawing is a good perspective sketch of the completed object. In draftsmanship and refinement of design these problems are of superior quality. It is in every respect an excellent collection. Price, $1.00.

SELECTED SHOP PROBLEMS.. By George A. Seaton. A collection of sixteen problems in woodworking. Each problem has been put to the test and has proven satisfactory to the teacher who designed it and to the pupil who made it. Price, 20 cents.

PROBLEMS IN FURNITURE MAKING. By Fred D. Crawshaw. The revised and enlarged edition of this well-known book contains 43 full page working drawings of articles of furniture. Every piece shown is suitable for construction in high school classes and is appropriate and serviceable in the home. In addition to the working drawings, there is a perspective sketch of each article completed. There are 36 pages of text giving notes on the construction of each project, chapters on the "Design," and "Construction" of furniture and one on "Finishes." The last chapter describes 15 methods of wood finishing, all adapted for use on furniture. The book is loose leaf and is bound in board covers. Price, $1.00.

PROBLEMS IN WOODWORKING. By M. W. Murray. A convenient collection of good problems consisting of forty plates of working drawings, of problems in bench work that have been successfully worked out by boys in one of the grades from seven to nine, inclusive. Price, 75 cents.

MANUAL TRAINING TOYS FOR THE BOYS' WORKSHOP. By H. W. Moore. A popular boys' book that is truly educational. The book contains 111 pages and thirty-five full-page plates of working drawings illustrating 42 projects. All the projects are overflowing with "boy" interest, are well adapted to the upper grades of the elementary school and are new in the manual training shop. The text treats of tools and tool processes and gives instructions for making each project. Price, $1.00.

PUBLISHED BY THE MANUAL ARTS PRESS, PEORIA, ILLINOIS

REFERENCE BOOKS *for* TEACHERS *of* WOODWORKING

DESIGN AND CONSTRUCTION IN WOOD. By W Noyes. A book full of charm and distinction and th to give due consideration to the esthetic side of wood ing. It is intended to give to beginners practice in des simple projects in wood and an opportunity to acquire in handling tools. The book illustrates a series of pr and gives suggestions for other similar projects togethe information regarding tools and processes for making author has, as nearly as possible, reduced the work shop to words and pictures to help the one who must alone, and at the same time suggesting and encouraging student worker to "design good things." The book shows the work of the artist craftsman in treating common projects in an uncommon way. A pleasing volume abundantly and beautifully illustrated. Price, $1.50.

HANDWORK IN WOOD. By William Noyes. A handbook for teachers and a textbook for normal school and college students. The best reference book available for teachers of woodworking. A comprehensive and scholarly treatise, covering logging, sawmilling, seasoning and measuring, hand tools, wood fastenings, equipment and care of the shop, the common joints, types of wood structures, principles of joinery, and wood finishing. 304 illustrations—excellent pen drawings and many photographs. Price, $2.00.

WOOD AND FOREST. By William Noyes. A companion volume to "Handwork in Wood" and Design and Construction in Wood" by the same author. Especially adapted as

e book for teachers of woodworking. Not too dif use as a textbook for normal school and colleg Treats of wood, distribution of American forest he forest, enemies of the forest, destruction, co and uses of the forest, with a key to the comme r Filibert Roth. Describes 67 principal species of h maps of the habitat, leaf drawings, life size photo nd microphotographs of sections. Contains a gen iography of books and articles on wood and forest. Illustrated with photographs from the United State rvice and with pen and ink drawings by Anna Gau oyes and photographs by the author. 309 pages. Price, $3.00.

CORRELATED COURSES IN WOODWORK AND MECHANICAL DRAWING. By Ira S. Griffith. This book meets the everyday need of the teacher of woodworking and mechanical drawing for reliable information concerning organization of courses, subject matter, and methods of teaching. It covers classification and arrangement of tool operations for grades 7, 8, 9 and 10, shop organization, allotment of time, design, shop excursions, stock bills, cost of material, records, shop conduct, the lesson, maintenance, equipment and lesson outlines for grammar and high schools. It also contains one hundred full-page plates of working drawings of projects reprinted from the two books by the same author, "Projects for Beginning Woodwork and Mechanical Drawing" and "Advanced Projects in Woodwork." It is based on sound pedagogy, thoro technical knowledge and successful teaching experience, and is the most complete and thoro treatment of the subject of teaching woodworking ever published. Price, $1.50.

PUBLISHED BY THE MANUAL ARTS PRESS, PEORIA, ILLINOIS

TEXTBOOKS *of* MERIT *for* STUDENTS USE

ESSENTIALS OF WOODWORKING. By Ira S. Griffith. A textbook written especially for grammar and high school students. The standard textbook on elementary woodworking. A clear and comprehensive treatment of woodworking tools, materials, and processes, to supplement, but not to take the place of the instructions given by the teacher. The book does not contain a course of models; it may be used with any course. It is illustrated with photographs and numerous pen drawings. Price, $1.00.

PROBLEMS IN WOOD-TURNING. By Fred D. Crawshaw. In the first place this book is a textbook on the science and art of wood-turning, illustrated by fifty pen sketches. In the second place it is a book of problems—25 plates covering spindle, faceplate, and chuck turning. It gives the mathematical basis for the cuts used in turning. In the third place it is a helpful discussion of the principles of design as applied to objects turned in wood. It is a clear, practical and suggestive book on wood-turning, and a valuable textbook for students' use. Price, 80 cents.

WOOD PATTERN-MAKING. By Horace T. Purfield. This book was written expressly for use as a textbook for high school, trade school, technical school and engineering college students. It is a revised, enlarged and newly illustrated edition. Price, $1.25.

BEGINNING WOODWORK, At Home and in School. By Clinton S. Van Deusen. A valuable textbook for rural schools, by one who has made a special study of the manual training problems in the country school. A full and clear description in detail of the fundamental processes of elementary benchwork in wood. This description is given through directions for making a few simple, useful articles, suitable either for school or home problems. The book contains more than one hundred original sketches and ten working drawings. Price, $1.00.

SIMPLIFIED MECHANICAL PERSPECTIVE. By F. F. Frederick. A textbook of simple problems covering the essentials of mechanical perspective. It is planned for pupils of high school age who have already received some elementary training in mechanical drawing. It is simple, direct and practical. Price, 75 cents.

PROBLEMS IN MECHANICAL DRAWING. By Charles A. Bennett. With drawings made by Fred D. Crawshaw. A students' textbook consisting of 80 plates, classified into groups according to principle and arranged according to difficulty of solution. Its purpose is to furnish teachers of classes beginning mechanical drawing with a large number of simple, practical problems. These have been selected with reference to the formation of good habits in technique, the interest of the pupils and the subjects generally included in a grammar and first-year high school course. Each problem is given unsolved and therefore in proper form to hand to the pupil for solution. Price. $1.00.

MECHANICAL DRAFTING. By H. W. Miller. A textbook on mechanical drawing, for first year engineering, and advanced high school students. It supplements the work of the instructor in such a way as to reduce lecture work to a minimum. It is written about a flexible course, but may be used equally well with any course. The book abounds in illustrations, both line drawings and half-tones. It shows a wise selection of material, a keen insight into the work of the draftsman, and a thoro knowledge of the principles and methods of teaching. Above all it is a practical treatment of subject matter and a students' text easily adaptable to varied schools and conditions. Contains 219 pages and 225 illustrations, and is bound in black flexible leather, pocket book size. Price, $1.50.

THE DRAFTING ROOM SERIES. By F. H. Evans. A modern and successful textbook, rich in content, practical in methods and extremely adaptable in form. The result of a new analysis of the processes of practical drafting by an experienced draftsman, engineer and teacher. It consists of 54 cards and 3 pamphlets of standard filing-card size—5"x8", in a filing box. The form is convenient, practical, and capable of unlimited expansion. Price, complete, $2.00.

PRACTICAL TYPOGRAPHY. By George [illegible] McClellan. A remarkable textbook for students of printing. It contains a course of [illegible] ready to place in the hands of pupils, and expl[illegible] the most approved methods used in curren[illegible] A valuable feature of the book lies in the fa[illegible] early stages of the course the pupil sets up [illegible] of what he is doing with his hands. It [illegible] examples of composition from "Curren[illegible] of a Book", and the "Comp[illegible]

PUBLISHED BY THE MANUAL ARTS [illegible]

HANDBOOKS *for* TEACHERS

COPING SAW WORK. By Ben W. Johnson. Contains working drawings and suggestions for teaching a course of work in thin wood that is full of fun for the children, and affords ample means for training in form study, construction, invention and careful work. Has been called "applied mechanics for the fourth grade." Price, 20 cents.

INEXPENSIVE BASKETRY. By William S. Marten. A teachers' manual presenting in detail the processes of coiled basket construction. The book gives a complete treatment of the necessary equipment, and the preparation of raw materials, and outlines a course for grades three to six. In addition it contains a bibliography of books and magazine articles treating of basketry. It is unique among books on basketry, as it shows by a series of excellent photographs every step in the construction of coiled baskets. The illustrations "really illustrate" and show the hand full-size in the different positions assumed in making a complete basket. Price, 25 cents.

PAPER AND CARDBOARD CONSTRUCTION. By G. F. Buxton and F. L. Curran. A book of special value because of the fund of information, and the excellent selection and classification of material. It is a handbook for teachers covering book problems, box problems, card problems and envelope problems for the first four grades. It outlines courses, gives detailed working directions, and suggestions concerning equipment, supplies and methods of teaching. Illustrated with photographs and complete working drawings of each problem. Price, $1.50.

LEATHER WORK. By Adelaide Mickel. A manual on art leather work for students, teachers, and art workers. It gives detailed descriptions of the various processes of working treating of flat modeling, embossing or repousse, carved leather and cut work. It is well illustrated with photographs of finished work and working drawings of twenty useful and beautiful articles suitable for school and home work. Price, 75 cents.

CLASSROOM PRACTICE IN DESIGN. By James Parton Haney. A concise up-to-date, richly illustrated handbook on the teaching of applied design. Price, 50 cents.

CLAY WORK. By Katherine Morris
was written by a grade teacher and art w
ers in acquiring the technique of clay w
them suggestions concerning the teaching
of clay work suited to pupils in the ele
covers the study of natural forms, the h
and the round, animal forms, story illu
ornament, hand-built pottery, and potter
is richly illustrated with more than 8
cuts showing processes, designs, and
from ten to twelve years of age. Pri

HANDICRAFT FOR GIRLS. By
handbook for teachers, detailing a five
for girls in the public schools. Ch
and fabrics, cloth and cardboard con
in its relations to art, and home
enough to be thoroly practical an
the varied conditions in rural, villa
$1.00.

THE WASH METHOD OF HA
By F. F. Frederick. A brief, clear
in sepia and illustrated with wash
painting by the author. Price,

MANUAL ARTS FOR VOCAT
[illegible] A valuable addition
[illegible] of industrial e
[illegible] for the devel
[illegible] the end
[illegible] in a pract
[illegible] a source of
[illegible] interested in

HANDWORK INSTRUCT
[illegible]

PUBLISHED BY THE MANUAL ARTS PRESS.